

This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

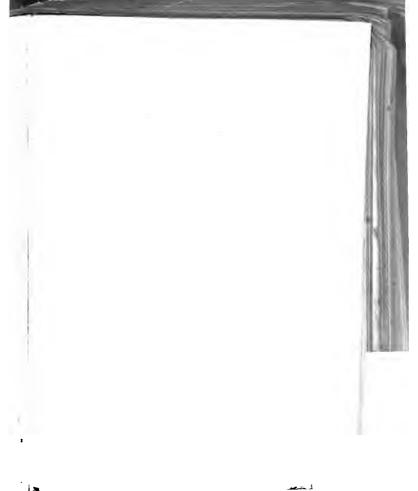
- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + Refrain from automated querying Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at http://books.google.com/

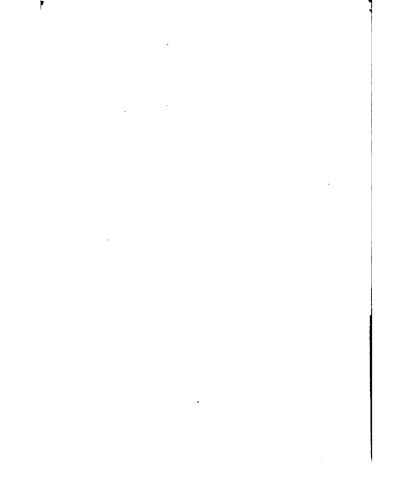












NAMES AND ADDRESSES

OF THE

OFFICERS AND MEMBERS

OF THE

SOCIETY OF

NAVAL ARCHITECTS

AND MARINE ENGINEERS

12 WEST THIRTY-FIRST STREET, NEW YORK

FEBRUARY 1, 1906.

ROEHR PUBLISHING COMPANY

35 MYRTLE AVENUE

BROOKLYN, N. Y.

C LYNN.

COCIETY OF NAVAL ARCHITECTS MARINE ENGINEERS

JUDLIC LIBRARY

ART E LENOX AND IN F UNDATIONS 1506

LIST OF OFFICERS

President

FRANCIS T. BOWLES, Esq.

Past President and Honorary Associate Member CLEMENT A. GRISCOM, Esq.

Vice-Presidents

Washington L. Capps, U.S.N. Charles H. Loring,, U.S.N. Charles H. Cramp, Esg. Geo. W. Melville, U.S.N. CHARLES H. CRAMP, Esq. ROBLEY D. EVANS, U. S. N. FRANK L. FERNALD, U. S. N. GEORGE W. QUINTARD, Esq. CHARLES W. RAE, U. S. N. FRANK E. KIRBY, Esq. EDWIN A. STEVENSON TAYLOR, Esq. EDWIN A. STEVENS. Esq.

Members and Associate Members of Council

W. IRVING BABCOCK, Esq. W. H. Brownson, U. S. N. James E. Denton, Esq. George W. Dickie, Esq. WILLIAM F. DURAND, Esq. W. D. Forbes, Esq. CHARLES R. HANSCOM, Esq. NAT. G. HERRESHOFF, Esq. IRA N. HOLLIS, Esq. Wm. H. Jaques, Esq. John C. Kafer, U. S. N. FRANK B. KING, Esq.

Joseph H. Linnard, U.S. N. JACOB W. MILLER, Esq. ALBERT P. NIBLACK, U. S. N. LEWIS NIXON, Esq. CECIL H. PRABODY, Esq. WALTER A. Post, Esq. HARRINGTON PUTNAM, Esq. HORACE SEE, Esq. E. PLATT STRATTON, Esq. DAVID W TAYLOR, U. S. N. GEORGE E. WEED, Esq.

Executive Committee

FRANCIS T. BOWLES, Esq., ex-officio WASHINGTON L. CAPPS, U.S.N. LEWIS NIXON, Esq. HARRINGTON PUTNAM, Esq. Edwin A. Stevens, Esq. STEVENSON TAYLOR, Esq.

WILLIAM J. BAXTER, U. S. N., ex-officio.

Secretary-Treasurer WILLIAM J. BAXTER.

LIST OF MEMBERS

HONORARY MEMBERS.

HASWELL, CHARLES H., 324 West 78th street, New York WHITE, SIR WILLIAM, K. C. B., Etc., Late Chief Constructor, British Navy, Cedarcroft, Putney Heath, S. W., London England.

HONORARY ASSOCIATES.

BRASSEY, Rt. Hon. Lord, K.C.B., Etc., London, England. GRISCOM, CLEMENT A., 305 Walnut st., Philadelphia, Pa.

LIFE MEMBERS

CRAMP, CHARLES H., The Wm. Cramp & Sons'
Ship and Engine Building Co., Philadelphia, Pa.
FRICK, HENRY C., Capitalist, Frick Bldg., Pittsburg, Pa.
JAQUES, WM. H.,
Little Boar's Head, N. H.
MANTON, FRANK S., Manager,

American Ship Windlass Co., Providence, R. I. Quintard, George W., Quintard Iron Works,

Foot East 12th street, New York.

LIFE ASSOCIATE MEMBERS

DINKEY, ALVA C., President, Carnegie Steel Co.,
Pittsburg, Pa.
PUTNAM, HARRINGTON, 27 William street, New York.
QUAYLE, GEORGE L., Retired Ship Builder and Ship
Owner, 3080 Euclid avenue, Cleveland, Ohio.
STEVENS, EOWIN A., 68 Broad street, New York.

MEMBERS

A

- ADAMS, LAWRENCE STOWELL, Naval Constructor, U. S. Navy, Navy Yard, Norfolk, Va. ADDICKS, WALTER R., Vice-President, Consolidated Gas Company, 4 Irving Place, New York City. ALEXANDER, EDWIN S., Inspector, Newport News S. B. & D. D. Company, Newport News, Va. ALI, M., Lieutenant, Imperial Ottoman Navy, Constantinople. Turkey. On duty at The Wm. Cramp & Sons' S. & E. B. Company, Philadelphia, Pa. ALLDERDICE, WM. H., Commander, U. S. Navy, Retired, care of Navy Dept., Washington, D. C. ALLEN, ARTHUR P., Asst. Manager, Hall Brothers' Marine Railway & Shipbuilding Company. Winslow, Washington. ALLEN. REDFIELD H., Chief Draughtsman, Fore River S. & E. Co., Quincy, Mass. ALLWORK, ROLAND, Inspecting Engineer, Panama R. R. & S. S. Line, 24 State street, New York. ALMY, DARWIN, President, Almy Water-tube Boiler Company, 178-184 Allen avenue, Providence, R. I. ANDERSON, MARTIN A., Commander, U. S. Navy, Retired. "U. S. S. Ohio." San Francisco, Cal. ANDREWS, JR., THOMAS, Asst. Manager and Naval Architect, Harlan & Wolffs, 31 Wellington
 - Angstrom, Arendt, General Manager, Canadian Ship-Building Company, Ltd., Toronto, Ontario, Canada.

 Arsenius, J. A. F., Torpedo Engineer, Royal Swedish
 Navy, Royal Dockyard, Stockholm, Sweden.

 Artis, Thomas E., Chief Draughsman, Bath Iron
 Works, Bath, Maine.

Place, Belfast, Ireland.

- ATLEE, JOSHUA W., Naval Constructor, The Wm.

 Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.

 House—Riverton. Burlington Co., N. J.
- ATHOUGUIA, ANTONIO JERVIS D', Royal Naval Engineer, Portuguese Navy, 13 Rua da Paz,
 Lisbon, Portugal.
- AUBIN, L. C. E. M., Engineer of Naval Construction, Navy Department, Paris, France.
- AYER, ARTHUR WHITTIER, Mechanical Engineer, Care
 Harrison Brothers & Company, 3403 Gray's
 Ferry Road, Philadelphia, Pa.
- AYERS, SAMUEL L. P., Chief Engineer, U. S. Navy (retired), 1420 Master street, Philadelphia, Penna.
- BABCOCK, W. IRVING, Engineer and Naval Architect, Maritime Building, Battery Park, New York.
- Bailey, Charles F., Chief Engineer, Newport News S. B. & D. D. Company, Newport News, Va.
- BAILEY, THEODORUS S., Asst. Chief Engineer, Electric
 Boat Co., Quincy, Mass.
- BALLORD, WEBB RYSEE, Naval Architect, 410 Lumber Ex., Seattle, Wash.
- BANCROFT, J. SELLERS, General Manager, Lanston
 Monotype Machine Co., 1231 Callowhill St.,
 Philadelphia, Pa.
- BANESON, LLOYD, Naval Constructor, U. S. N.,
 Navy Yard, League Island, Pa.
- BARRETT, GEORGE E., Leading Draughtsman, Engineering Department, New York Shipbuilding Company, Camden, N. J.
- BARRUS, GEORGE HALE, Mechanical Engineer, 12 Pemberton Square, Boston, Mass.
- BARRY, RALPH E., Hull Draughtsman, C. & R.
 Department, Navy Yard, Brooklyn, N. Y.
- BARTLETT, CHARLES H., Draughtsman, C. & R. Dept., Navy Yard, 71 Hancock street, Boston, Mass.

BATES, EDWARD P., Manufacturer and Contractor. 228 West Water street, Syracuse, N. Y. BATES, WM. W., Naval Architect, 38 West 2nd avenue, Denver, Colo. BAUER, MAX HEINRICH, Naval Architect, Uhlenhorsterwez, 50, Hamburg, Germany BAXTER, WILLIAM, J., Naval Constructor, U. S. N., Navy Yard, Brooklyn, N. Y. BECKLEY. WILLIAM B., Morris Heights, New York. BELCHER. AMHERST W., Supt. Repair Shops, Cornell Steamboat Co., Rondout, N. Y. BELKNAP, FRANCIS W., care Cox & Stevens, 68 Broad street, New York. BERNIER, LOUIS LEON, Contracting and Consulting Engineer, James Reilly Repair and Supply Co., N. Y. House address, 270 Carroll street, Brooklyn, N. Y. BERRIER-FONTAINE, J. B. L. F. M., Directeur du Genie Maritime du Cadre de Reserve, 16 Boulevard de Strassbourg, Toulon-sur-mer, (Var), France. BERRY, WARREN TAYLOR, Assistant Superintendent, Marine Construction, N. Y., N. H. and H. R. R. Co., 230 West 97th street, New York. BERTIN, L. E., Director of Naval Construction. French Navy. 8 Rue Garanciere. Paris. France. BESSELIEVRE. WM. C., JR., 57 Garfield avenue, New London, Conn. BEURET, JOHN D., Naval Constructor, U. S. Navy, Navy Yard, Puget Sound, Wash. BIGELOW, FRANK LEWIS, Pres., The Bigelow Co., New Haven, Conn. BILES, J. HARVARD, Professor Naval Architecture, University Glasgow, Glasgow, Scotland. BINNEY, ARTHUR, Naval Architect, 70 Kilby street, Boston Mass.

Blankenship, John Millington, Asst. Supt., Merchants and Miners' Transportation Co.,
1605 St. Paul Bldg., Baltimore, Md.
BLOM, CHRISTIAN, Commander Norwegian Navy and
Sub-Director of the Navy Yard, Horten, Norway.
Bowers, Charles C., Superintending Engineer,
151 Chilton street, Elizabeth, N. J.
Bowers, Frederick C., Lieutenant-Commander, U.
S. N., "U. S. S. Brooklyn," care Navy Dept.,
Washington, D. C.
Bowles, Francis T., Ex-Chief Constructor U. S.
Navy, President, Fore River Shipbuilding Co.,
Quincy, Mass.
Brauchli, Jacob, Inspecting Draughtsman, Office of
Superintending Engineer, U. S. N., Newport
News S. B. & D. D. Co., Newport News, Va.
BRAY, C. D., Prof. Mechanical Eng., Tuft's College, Mass.
BREWER, CHARLES B., Chief Draughtsman, Bureau of
C. & R., Navy Department, Washington D. C.
Brown, Daniel D. B., Inspector, U. S. Engineer's
Office, 920 Virginia street Vallejo, Cal.
BRYSON, JOHN, Bureau of Construction and Repair,
Navy Dept., Washington, D. C.
BUCKELEW, CHARLES HENRY, Manager, New York
Office, Ashton Valve Co., 128 Liberty street,
New York. House, 126 West 5th street,
Plainfield, N. J.
Bull, Goold H., Professor of Marine Engineering,
Webb's Academy, University Heights, New York.
Busch, Arthur L., Electric Boat Co., Quincy, Mass.
busch, ARTHUR L., Electric Boat Co., Quincy, Mass.
C
CANAGA, ALFRED B., Commander, U. S. N., Bureau
of S. E., Navy Dept., Washington, D. C.
CANFIELD, HOBART, Master Mechanic Floating Equip-

ment, P. R. R., Hoboken, N. J.

CAPDEVIELLE, HENRY, Leading Ship Draughtsman,
C. & R. Department, Navy Yard, Brooklyn, N. Y.
CAPPS, WASHINGTON L., Rear-Admiral and Chief Con-
tructor, U. S. N., Chief of the Bureau of
Conctruction and Repair, Navy, Department,
Wahington, D. C.
CARNES, WILLIAM F., Assistant Supt. Engineer in
charge of Drawing Rooms, Harlan & Hollings-
worth Co., 906 Franklin street, Wilmington, Del.
CARTER, GEORGE JOHN, Manager, Elswick Shipyard,
Sir W. G. Armstrong, Whitworth & Co., Ltd.,
New Castle-on-Tyne, England.
CARTER, T. F., LieutCommander, U. S. N.,
Navy Yard, Pensacola, Fla.
CASKEY, SAMUEL SHEARER, Supt. of Machinery
Construction, Harlan & Hollingsworth Co.,
Wilmington, Del.
CASSIDY, ARTHUR B., Draughtsman, Office of Superin-
tending Constructor, Fore River Shipbuilding
Co., 71 Winthrop avenue, Wollaston, Mass.
CATHCART, WILLIAM LEDYARD, Gwynedd, Pa.
CHASE, MASON SMITH, 31 Wales st., Dorchester, Mass.
CLARK, CARL H., Naval Architect and Engineer,
509 Chamber of Commerce, Boston, Mass.
CLARK, DEAN, Smith Premier Typewriter Co.,
Syracuse, N. Y.
CLARK, WALTER WILLIAM, Erecting Engineer, Stirling
Consolidated Boiler Co., Barberton, Ohio.
House, 1322 Stiles street, Philadelphia.
CLARKE, GEO., 1322 Stiles street, Philadelphia, Pa.
CLARKE, SAMUEL J., 309 West 103d street, New York.
Correct Witters Proving Descriptions Description
Collison, William Brown, Draughtsman, Bureau
of C. & R., Navy Dept., Washington, D. C.
COOK, FRED. M., Leading Hull Draughtsman,
Bath Iron Works, Union street Court, Bath, Me.

Y.	COP, HUIBERT, Prof. Naval Architecture, Polytechnical School at Delft, Oost Singel 61, Delft,
	Holland. CORNBROOKS, ERNEST I., Maryland Steel Co., Sparrow's Point, Maryland.
C.	CORNBROOKS, THOMAS M., Chief Draughtsman, Hull Department, Maryland Steel Co., 511 Franklin Terrace, Sparrow's Point, Md.
eł.	COWLES, WM. BARNUM, Consulting Naval Architect and Mechanical Engineer, Lake and Wason streets, Cleveland, Ohio.
d.	Cox, Daniel H., Naval Architect, 68 Broad street, New York.
L .	Cox, Irving, Naval Architect, 68 Broad street, New York.
i.	COXE, WILLIAM GRISCOM, President, Harlan & Hollingsworth Co., Wilmington, Del.
	CRAIG, GEORGE L., General Manager, Craig Shipbuilding Company, Toledo, O.
	CRAIG, JOHN, President, Craig Shipbuilding Co., Toledo, O. CRAIG, JOHN F., Treasurer,
f .	Craig Shipbuilding Co., Toledo, O. CRAMP, EDWIN S., Supt. Engineer, Wm. Cramp & Sons' S. & E. B. Co., 1936 Spruce street, Philadelphia, Pa.
	CRAMP, WILLIAM M., 1227 N. Broad st., Philadelphia, Pa.
•	CROWNINSHIELD, B. B., Naval Architect, 131 State street, Boston, Mass.
	CURR, ROBERT, Surveyor of Iron and Steel Hulls, Rockefeller Building, Cleveland, Ohio.
••	CURTIS, CHARLES GORDON, International Curtis Marine Turbine Co., 149 Broadway, New York.
	CURWEN, HENRY ROBERT, Draughtsman, Fore River, Shipbuilding Co., Quincy, Mass.



			D		
DAVIDSON,	JAMES	EDWARD,	Assistant	General	Manager,

James Davidson, Shipbuilder, 1710 Centre

Avenue, Bay City, Mich. DAVIDSON, MARSHALL T., 108 St. James Place, Brooklyn, N. Y. DAVIS. CHARLES HENRY, Consulting Engineer, Room 024. Board Exchange Building, 25 Broad street, New York. DAVIS. LEONARD D., 2668 Peach street, Erie, Pa. DEGELDER, WILLEM HESSEL MARIUS, Manager L. Smit and Zoon, Ship and Engine Building Works, Kinderdyk, Holland. DELAVAL, GEO., Manager, Blake and Knowles Steam Pump Company, East Cambridge, Mass. DELONG. HAROLD W., P. O. Box 1036, Bath, Me. DEMING, WILLIAM HENRY, Draughtsman and Mechanical Engineer, Continental Iron Works, Brooklyn, N. Y. DENTON, JAMES E., Professor Exp. Mechanics, Stevens Institute of Tech., Hoboken, N. J. DESANGES, H. L., Supt. Floating Equipment. L. I. R. R., Long Island City, N. Y. DIALOGUE, JOHN H., Shipbuilder, 515 Linden street, Camden, N. J. DICK, THOMAS MURRITT. 244 Argyle Road, Brooklyn, N. Y. DICKEY, WM. D., Mechanical Engineer, Room 445. Produce Exchange, New York. DICKIE, DAVID W., 143 Washington St., Hartford, Conn. DICKIE, GEO. W., Naval Architect and Marine Engineer, 315 California St., San Francisco, Cal. DICKIE, JAMES, Naval Architect and Marine Engineer. 315 California street, San Francisco, Cal. DICKINSON, RANDALL T., Consulting Engineer, Dela-

ware River Ship and Engine Works, Chester, Pa.

DIXON, ALBERT F., Captain, U. S. N., Bureau
of S. E., Navy Department, Washington, D. C.
Dobson, WM. A., Wm. Cramp & Sons' S. & E. B. Co.,
Philadelphia, Pa.
DODD, WILLIS GORMAN, President, Union Iron Works,
San Francisco, Cal.
Donald, James, Naval Architect, New York
Shipbuilding Company, Camden, N. J.
DOUGHERTY, CHARLES J., Electrical Engineer, The
Wm. Cramp & Sons' S. & E. B. Co.,
Philadelphia, Pa.
DuBois, A. J., C. E., M. E., Prof. of Engineering,
Sheffield Scientific School, Yale College,
New Haven, Conn.
DuBosque, F. L., Assistant Engineer, Floating Equipment P. R. R., Jersey City, N. J.
Duke, James Oliver, Asst. Superintendent,
Kensington Shipyard Company, Philadelphia, Pa.
DURAND, WILLIAM F., Professor, Mechanical Engi-
neering, Stanford University, Cal.
F.
EBSEN, HENRY L., Consulting Engineer, 230 West
street, New York. House, 927 Bloomfield
street, Hoboken, N. J. ECKART, WILLIAM R., Consulting Engineer,
3014 Clay street, San Francisco, Cal.
EDSON, JARVIS B., 313 West 74th street, New York.
EDWARDS, CHARLES B., Fore River Shipbuilding Co.,
Quincy, Mass.
EIMERT, GEORGE H., Marine Department, New York
Shipbuilding Company, Camden, N. J.
ELDRIDGE, FRANK H., Commander, U. S. Navy,
Naval Examining Board, Mills Building,
Washington, D. C.
ELLIOTT, WILLIAM E., Chief Engineer,
Condish Transportation Company Chicago, Ill.

ELWELL, HOWARD P., Ouincy, Mass.
ENGARD, ALBERT C., Chief Engineer, U. S. Navy
(retired), 2131 North 19th street, Philadelphia, Pa.
EPES, HENRY S., Assistant Naval Architect
Electric Boat Co., Quincy, Mass.
EVANS, HOLDEN A., Naval Constructor, U. S. Navy,
Navy Yard, Mare Island, Cal.
EVERETT, HAROLD ARTHUR, Instructor in Naval Archi-
tecture, Massachusetts Institute of Technology,
Boston, Mass.
EWERTZ, ERIC HAROLD, Supt. of Construction of
Subm. Electric Boat Co., Quincy, Mass.; 63
Brook street, Wollaston, Mass.
•
F
FAIRBURN, WILLIAM A., Suptg. Engineer, Southern
Pacific Company, Pier 34, N. R., New York.
FARGUSSON, MARK, Naval Architect and Engineer,
Room 801, 11 Broadway, New York.
FARMER, EDWARD, Chief Engineer, U. S. Navy (re-
tired), 274 Newbury street, Boston, Mass.
FELTON, HERBERT C., Superintendent,
Delaware River Ferries, Camden, N. J.
FERGUSON, GEORGE R., Assistant Engineer,
Dept. of Bridges, 1215 Park Row Bldg., New York.
FERGUSON, HOMER, L., Supt. of Hull Construction,
Newport News S. B. & D. D. Co., Newport News, Va.
FERNALD, FRANK L., Naval Constructor, U. S. N.
(retired), 86 Madison avenue, New York.
FERRAND, C., Ingenieur-in-Chief de la Marine Fran-
caise, 48 Rue de Grenelle, Paris, France.
FLETCHER, ANDREW, JR., North River Iron Works,
Hoboken. N. J.
FLETCHER, WM. H., North River Iron Works,
Hoboken. N. J.

FLOOD, H. C., General Manager, Bergen Mekanikse Vaerksted, Bergen, Norway. FOLEY. W. C. LEB., Asst. Supt. Hull Construction, Newport News S. B. & D. D. Co., Newport News, Va. FORBES, W. D., Member of W. D. Forbes Co., 1300 Hudson street, Hoboken, N. I. 26 Broadway, New York. FORD, DANIEL EDWARD, FORSYTH, ROBERT, Chief Engineer, Union Iron Works, San Francisco, Cal. FRASER, ROBERT H., Consulting Engineer and Marine Surveyor, Chamber of Commerce Building. Boston, Mass. FREAR, HUGO P., Naval Architect, Union Iron Works, 127 DeLong avenue, San Francisco, Cal. FRICK, HENRY EDGEWORTH, Fore River Shipbuilding Co., Quincy, Mass. FRIES, AXEL H., Gen. Manager, Soderhamn's Machine Works and Ship Yard, Soderhamn, Sweden. G GARDNER, JOHN HOWLAND, Asst. Supt., Marine Construction, N. Y., N. H. & H. R. R. Newport, R. I. GARDNER, WM., Naval Architect, 1 Broadway, New York. GASKIN, EDWARD F. W., Manager, Union Dry Dock Co., 516 Norwood avenue, Buffalo, N. Y. GATEWOOD, WILLIAM, Chief Draughtsman, Hull Dept., Newport News S. B. & D. D. Co., Newport News, Va. GILLMOR, HORATIO G., Naval Constructor, U. S. N., Suptg. Constructor, Bath Iron Works, Bath, Me. GODBOLD, CHARLES H., Jr., Draughtsman, Union Iron Works, San Francisco, Cal. GOLDEN, MICHAEL J., Professor Dynamic Engineering,

ç

Purdue University, Lafayette, Ind.

GRAY, THOMAS, Professor Dynamic Engineering, Rose Polytechnic Institute.

House, 802 Chestnut street, Terre Haute, Ind. GREENE, DAVID M., Mechanical Engineer,

41 1st street, Troy, N. Y.

GROESBECK, WM. G., Naval Constructor, U. S. N.,

Navy Yard, Boston, Mass.

GROGAN, FRANK WILLIS,
123 Tenth street N. E., Washington, D. C.
GUNNELL, ELIAS, President,

Manitowoc Dry Dock Co., Manitowoc, Wis.

н

HAIG, ROBERT, Surveyor, Lloyd's Register of Shipping, 324 Bourse, Philadelphia, Pa.

HAIGHT, ROBERT STANLEY, Assistant to Superintending Engineer, Old Dominion S. S. Company,

81 Beach street, New York City.

HALL, ROBERT EVERETT, Secretary, New York Steam Fitting Co., 137 Elm street, New York, N. Y.

HALL, THOMAS S., Supt. Engineer, New York and Texas S. S. Co., 120 Front street, New York, N. Y.

HAMMAR, HUGO, Naval Architect,

Lindholmen, Gottenberg, Sweden.

HAMPTON, JAMES R., Superintending Engineer, Townsend-Downey Shipbuilding Co.,

Shooters Island, N. Y.

HAND, HARRY W., General Manager, The Wm. Cramp & Sons' S. & E. B Company, Philadelphia, Pa.

HANSCOM, CHARLES R., President,

Eastern Shipbuilding Co., New London, Conn.

Hanscom, John F., Naval Constructor, U. S. N. (retired), Senior Member of Board on Changes, Room 11, 4th Floor, P. O. Bldg., Philadelphia, Pa.

HARGAN, JAMES A., Chief Draughtsman. C. & R. Dept., Navy Yard. House, 45 New York avenue, Brooklyn, N. Y. HARTT, WM. H., Chief Draughtsman, C. & R. Dept., Navy Yard, Norfolk, Va. HARVEY. URBAN. 1st Assistant Engineer. Revenue Cutter Service. Division Revenue Cutter Service, Treasury Department, Washington, D. C. HAUG, JOHN, Supt. Marine Transportation, Pacific Coast Oil Co., Port Richmond, Cal. 42 East 21st street, New York. HAWES, R. J., HAYWARD, H. S., Superintendent Motive Power, Pennsylvania R. R., Jersey City, N. J. HAY, MARLEY F., Superintending Constructor of Electric Boat Co., 11 Pine street, New York. HECTOR. DETLOF A., Draughtsman, Fore River Shipbuilding Co., Ouincy, Mass. HENDERSON, J. C., General Manager, Whitestone Forge and Construction Co., 11 Broadway, or 230 W. 103d street, New York, N. Y. HERBERT, FREDERICK DAVIS. 71 Broadway, New York. HERRESHOFF, JOHN B., President, Herreshoff Mfg. Co., Bristol, R. I. HERRESHOFF, NATHANIEL G., Vice-Prest, and Manager Herreshoff Mfg. Co., Bristol, R. I. HESS. HENRY. Managing Director and Chief Engineer. Deutsche Niles-Werk Zeugmaschinen Fabrik, Ober-Schone-weide, near Berlin, Germany. HIBBS, FRANK W., Manager, Moran Bros. Co., Seattle, Wash.

HIGGINS, HOWARD C., Superintending Engineer,
Old Dominion S. S. Co., 81 Beach street, New York.
HILL, EDWARD BUFFUM, Fore River Shipbuilding Co.,
Quincy, Mass.

HILL, WARREN E., Vice-President, Continental Iron Works, Station G, Brooklyn, N. Y. HILLMANN, GUSTAV, Naval Architect, 470 Greene avenue, Brooklyn. N. Y. Greensboro, Ala. Hobson, R. P., HODGE, HARRY SEYMOUR, President, Samuel F. Hodge & Co., Inc., 320 Atwater street, Detroit, Mich. HOLLIS, IRA N., Prof. Mechanical Engineering. Harvard University, Cambridge, Mass. HOOVER. JOHN B., Naval Constructor, U. S. N., (retired), 22 Stiles street, Elizabeth, N. J. Hoover, John B., Jr., 112 Warren Crescent, Norfolk, Va. HOPKINS, ALBERT LLOYD, Assistant to General Superintendent, Newport News S. B. & D. D. Co., 2004 West avenue, Newport News, Va. HOPKINS, EDWARD, Chief Draughtsman, Detroit Shipbuilding Co., Detroit, Mich. HOUGH, EDWARD STAMFORD SAMUEL, Engineer Surveyor, Bureau Veritas, San Francisco, Cal. HOUGHTON, WILLIAM, Leading Ship Draughtsman, Office of Superintending Constructor, Bath Iron Works, Bath, Maine. HOVGAARD, W., Professor of Naval Design, Massachusetts Institute of Technology, Boston, Mass. House, 17 Winthrop street, West Newton, Mass. HOWARD, OLIVER ZELL, Marine Engine and Boiler Draftsman, and Instructor in Mechanical Drawing, in the Dept. of Marine Engineering and Naval Construction, N. S. Naval Academy, Appapolis, Md. HOWELL, WILLIAM NEILL, Chief Engineer, Simon Lake, Universitats Str. 3B, Berlin, Germany, HOXIE. WILLIAM D., Marine Dept., Babcock & Wil-

COX Co., 85 Liberty street, New York, N. Y.
HOYT, FREDERICK M., President, Greenport
Basin and Construction Co., Greenport, N. Y.
Office, 45 Broadway, New York.

HUNTER, GEORGE BURTON, Chairman and Director, C. S. Swan & Hunter Co., Ltd., Wallsend-on-Tyne. England. HYDE, CHARLES E., Marine Engineer, Bath Iron Works, Bath, Me. HYDE, EDWARD W., President, Bath Iron Works, Bath, Me. IACOBUS. DAVID S., Professor of Experimental Engineering, Stevens Institute, Hoboken, N. J. JANSSON, CONSTANTIN, Naval Architect and Marine Engineer, Unions gtu 41, Helingsfors, Finland. JEFFREY, FRANK, Detroit Shipbuilding Co., Detroit, Mich. TOHNSTON, ARCHIBALD, General Superintendent. Bethlehem Steel Co., 120 Church st., Bethlehem, Pa. TOHNSTONE, EDWARD COCKBURN, General Superintendent and Chief Draftsman, Mosher Water Tube Boiler Co., 1 Broadway, New York. House, Piermont avenue, Grand View-on-Hudson, N. Y. IONES, CHARLES M., Consulting Engineer and Naval

JONES, CHARLES M., Consulting Engineer and Naval
Architect, 1514 North Sixth Street, Philadelphia.

JONES, WALTER R. T., Vice-President, American Bureau of Shipping, 51 Wall street, New York, N. Y.

JONSON, JULIUS, Iron and Brass Founder,
120 Liberty street, New York, N. Y.

JORDAN, S. S., Naval Architect and Engineer, Engineers' Club, 374 Fifth ave., New York, N. Y.

K

KAEMMERLING, GUSTAV, Lieutenant-Commander,
U. S. N., 156 Huntington avenue, Boston, Mass.
KAPER, JOHN C., Dumont, N. J.
KATZENSTEIN, LEOPOLD, Mechanical Engineer,
358 West street, New York, N. Y.
KEARNY, GEORGE H., Captain, U. S. N.,
Navy Yard, Brooklyn, N. Y.

KEOUGH. WILLIAM T., Consulting Engineer and Naval Architect, 508 Board of Trade Bldg., 131 State street, Boston, Mass. KILLILEA, JAMES J., Supt. Construction, U. S. Light House Establishment, 39 Howland street, Roxbury, Boston, Mass. KING, FRANK B., 1442 Rhode Island avenue, Washington, D. C. KIRBY, FRANK E., Naval Architect, 555 Woodward avenue, Detroit, Mich. San Francisco. Cal. KIRBY, GILBERT L., KONITZKY, H., Naval Architect, Baltimore Shipbuilding and Dry Dock Co., Station "E," Baltimore Md. LANZA, GAETANO, Professor, Theoretical and Applied Mechanics, Massachusetts Inst. Tech., Boston, Mass. LASSOE, VALDEMAR F., Engineer and Naval Architect, Maritime Building, 8 Bridge st., New York, N. Y. LEAVITT. FRANK M., Mechanical Engineer, 258 Broadway, New York. LEFLAIVE, L. J. G., Ex-Naval Constructor, French Navy, and Manager Bietrix, Leflaive, Nicolet, & Cie. Saint Etienne. France. LELAND. WALTER S., Instructor in Naval Architecture. Mass. Institute of Technology. Boston. Mass. LEONARD, JOHN C., Lieutenant-Commander, U. S. N., 112 Willoughby avenue, Brooklyn, N. Y. LEPINE, F. C., Carpenter, U. S. N., "U. S. S. Denver," Address, care of Navy Dept., Washington, D. C. LEVENTHAL, PHILIP, Designing Engineer and Chief Draughtsman, with Wm. Gardner, 1 Broadway, New York, N. Y. LEVY, EDMOND L., Vice-President, Neafie & Levy, Shipbuilders,

18

Room 314, Harrison Bldg., Philadelphia, Pa.

LIGNOLA, RAIMONDO, Naval Constructor, Royal Italian Navy, R. Cantiere di Castellamare di Stabia, Italy. LILJEGREN, CARL OSCAR, Ingenior, Goteborg, Sweden. LILLIEHOOK, CHARLES J. F. M., Prof. Naval Architecture, Royal Technical High School, Grefturegatan 63, Stockholm, Sweden. LINCOLN. JAMES M., 405 Lenox avenue, New York, N. Y. LINDFORS. HENRY A., Prof. Naval Architecture, Chalmers Institute Technology, Gottenburg, Sweden. LINNARD, JOSEPH. H., Naval Constructor, U. S. N., Bureau of C. & R., Navy Department, Washington, D. C. LOEWENSTEIN, LOUIS C., Instructor Mechanical and Marine Engineering, Lehigh University, South Bethlehem, Pa. LOGAN, ROBERT, Consulting Engineer, American Shipbuilding Co., Cleveland, Ohio. LORING, CHARLES H., ex- Engineer-in-Chief, U. S. N., (retired), 239 Clermont avenue, Brooklyn, N. Y. LOVEKIN, LUTHER D., Chief Engineer.

New York Shipbuilding Co., Camden, N. J.

LOYD, JOHN, Mechanical Engineer, 558-562 Water street, New York, N. Y.

LUKE, WILLIAM JOSEPH, Naval Architect,
John Brown & Company, Ltd., Clydebank, Scotland.
LUCAS, THEODORE, 801 St. Johns Place, Brooklyn, N. Y.

LYSHOLM, HENRY, Superintendent of Hull Construction, New York Shipbuilding Co., Camden, N. J.

M

MCALLASTER, EUGENE L., Mechanical Engineer and
Naval Architect, 502-504 Pioneer Buitang,
Seattle, Wash.

MCALLISTER, CHARLES ALBERT, Engineer-in-Chief, U. S. Revenue Cutter Service, Treasury Dept., Washington, D. C.

believe of Steel of Date Steel THE PERSONAL PROPERTY. The Contraction I Shape The Person of Person and Tomano, Joseph Mark. NAME AND POST OFFICE ADDRESS OF THE OWNER. 17) Vissimo como Josef, SSA San Designer Call.
Supplied Su the Personal and Applied. Street, Street, Street, House, Married To beginn and Small Specifical. " The Paris of the York, M. Y. Street, Sq. Street, Square, on Jensey Stee Sale Chicago and the second THE PERSON NAMED IN COLUMN TWO OF PERSONS NAMED IN - E E D. San Street THE R. P. LEWIS CO., LANSING MICH. Pro. Justine A State Sept. 170 Total Control Street Print



McDermott, George R., Prof., School of Marine
Construction, Sibley College, Cornell University, Ithaca, N. Y.
McElhiney, Mark P., Nautical Adviser, Marine
Dept., 252 Lisgar street, Ottawa, Ontario, Canada.
McFarland, Walter M., Westinghouse Electric and
Manufacturing Co., P. O. Box 911, Pittsburg, Pa.
McKinlay, James, Marine Draughtsman, Union Iron
Works, 645 Wisconsin street, San Francisco, Cal.
McMakin, Joseph, General Supt. of Construction,

U. S. Light House Board, Washington, D. C. MCMUTRIE, LAURENCE H., of McMutrie-Guiler Co.,

Consulting Engineers, 69 Wall st., New York, N. Y. MACALPINE, JOHN H., Naval Architect and Consulting

Engineer, 615 Walnut street, Philadelphia, Pa.

MACLEAN, ALEXANDER J., Prof, Naval Architecture, Webb's Academy, University Heights, N. Y.

MAGEE, EDWARD A., Chief Engineer, U. S. N., (retired), 187 Marcy avenue, Brooklyn, N. Y. MAGEE, GEO. W., Chief Engineer, U. S. N. (retired),

187 Marcy avenue, Brooklyn, N. Y.

MAGOUN, HENRY A., Engineer, Marine Department,
Maryland Steel Co., Sparrow's Point, Md.

MAIN, ARCHIBALD MACNICOL, Chief Draughtsman,
The Harlan & Hollingsworth Co., Wilmington, Del.
MALSTER, WILLIAM T., President, Columbian Iron

Works, 1811 North Charles street, Baltimore, Md.

Mancor, James Henry, Principal Engineer Surveyor, Lloyd's Register of Shipping,

15 Whitehall street, New York, N. Y.

MANNING, CHARLES H., Passed Asst. Engineer, U. S. N. (retired), Superintendent,

Amoskeag Mfg. Co., Manchester, N. H. MARVEL, THOMAS S., Shipbuilder,

51 Ann street, Newburgh, N. Y.

MATTHEWS, EVERETT M., Chief Draughtsman,
C. & R. Dept., Navy Yard, League Island, Pa
MATTICE, ASA M., Hotel Lucerne, 201 W. 79th
Street, New York.
MELLIN, CARL J., Consulting Engineer, American Lo-
comotive Company, 1109 Union st., Schenectady, N. Y.
MELVILLE, GEO. W., Rear-Admiral, Ex-Engineer-in-
Chief, U. S. N., (retired), 615 Walnut street,
Philadelphia, Pa.
MICHAEL, LUCIUS M., Hull Draughtsman,
N. Y. Shipbuilding Co., Camden, N. J.
MICKLEY, ALBERT J., Mechanical Engineer,
Dept. of Docks and Ferries, foot of West
57th street, New York City.
MIDDLETON, PERCY H., Vice-President H. I. Crandall
Company, 102 Border street, East Boston, Mass.
MILLER, SPENCER, Chief Engineer, Cableway Dept.,
Lidgerwood Mfg. Co., 95 Liberty street, New York.
House, 217 Turrell avenue, So. Orange, N. J.
MILLER, WALTER, Consulting Engineer,
407 Perry-Payne Building, Cleveland, O.
MILLS, EDMUND, in charge of Marine Dept.,
The Babcock & Wilcox Co., Bayonne, N. J.
House, 319 Arlington avenue, Jersey City, N. J.
MILNE, JAMES STRACHAN, Supt. Neafie & Levy S.
& E. B. Co., Philadelphia. House, The Robeson, Camden, N. J.
Monteagle, Robert Charles, Chief Engineer,
The Atlantic Works, East Boston, Mass.
MOONEY, THOMAS, Engineer, Roach's Shipyard,
Chester, Pa.
Moore, Douglass G.,
424 Westminster avenue, Elizabeth, N. J.
MOORE, MILLER F., 45 East 4th avenue, Roselle, N. J.
MOORE, STEWART H., 6639 Perry avenue, Chicago, Ill.

MORAN. ROBERT. President and Manager. Moran Bros. Co., Seattle. Wash. MORITZ, ALBERT, Commander, U. S. N. (retired), 153 East 73d street, New York. MOSHER, CHARLES D., Mechanical Engineer, 1 Broadway, New York, N. Y. Mower, Charles D., Naval Architect and Yacht Broker, 29 Broadway, New York. MUCKLE, M. R., JR., Mechanical Engineer, 21 South 12th street, Philadelphia, Pa. MULL, JAMES HENRY, General Supt., The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa. MULLER. GEORGE. Naval Architect and Engineer. 820 23rd street N. W., Washington, D. C. N NEWMAN, RICHARD LANO, Naval Architect, 20 Russell street, Victoria, B. C. NICKUM, WM. CARR, Draughtsman, Wm. Cramp & Sons' S. & E. B. Co., 133 Apsley street, Philadelphia, Pa. NILSON, LEONARD J., Yacht Builder, Ferry Bar, Baltimore. Md. NISH, WILLIAM, Supt. Engineer, Anchor Line, 17-19 Broadway, New York, N. Y. 26 Cortlandt street, New York, N. Y. Nixon, Lewis, NORMAN, JOHAN HUGO, Asst. Chief Draughtsman, Hull Construction Department, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa. NORTON, HAROLD P., Lieut.-Commander, U. S. Navy, Dept. of S. E., Navy Yard, Brooklyn, N. Y. NUTTING, DANIEL CHAPLIN, Naval Constructor, U. S. N., Navy Yard, Brooklyn, N. Y. NYSTEDT, THURE G., Naval Constructor, Royal Swedish Navy, Carlskrona, Sweden.

OLDHAM. JOSEPH R., Naval Architect. 814 Perry-Payne Building, Cleveland, O. O'NEIL, CHARLES, Rear-Admiral, U. S. N., (retired). Care of U. S. Despatch Agent, London, England. O'NEILL, JAMES J., Mechanical Engineer, The Fairfield Shipbuilding and Engineering Co., Ltd.,

Govan. Glasgow, Scotland. PACKARD, ALPHEUS APPLETON, Naval Architect and Engineer, 131 State street, Boston, Mass. PAGE, CHARLES BARNARD, President, Page Engineering Co., Inc., 507 West Pratt st., Baltimore, Md. PAHLOW, FRANKLIN CONRAD, Yard Supt., Great Lakes Engineering Works, Detroit, Mich. PALEN, FREDERICK POMEROY, Chief Draughtsman, Engine Dept., Newport News S. B. & D. D. Co., Newport News, Va. PALMER, GEORGE Q., President Quintard Iron Works, Foot of East 12th street, New York, N. Y. PALMER, NICHOLAS F., JR., Treasurer and General Manager, Quintard Iron Works, Foot of East 12th Street, New York, N. Y. PALMER. WILLIAM FRANKLIN. Architect and Managing Owner, Palmer Fleet, Uphams Cor., P. O. No. 27 Hartford street, Dorchester, Mass. PARSONS. H. DEB., Consulting Engineer, 22 William street, New York, N. Y. PATERSON, JAMES V., Naval Architect, International PATTERSON, JOSEPH SANBORN, Consulting Engineer,

Mercantile Marine Co., Pier 14, N. R., New York.

340 73rd street, Brooklyn, N. Y.

PATTERSON, HOWARD, President, New York Nautical College, 130-132 Water street, New York, N. Y.

PENTON, HENRY, Chief Engineer, Berlin, Germany. Great Lakes Engineering Works. 210 Palmer avenue, Detroit, Mich. PERHAM, ERNEST A., Leading Draughtsman, C. & R. Department, Navy Yard, Brooklyn, N. Y. PERRY, WILLIAM A., care H. R. Worthington Co., 114 Liberty street, New York, N. Y., House, 7 East 56th street. PEATISCHER. MATHIAS. Chief Engineer. Electro-Dynamic Co., Philadelphia, Pa. 162 West Coulter street, Germantown, Pa. PITTS, THOMAS DORSEY, Civil Engineer, 45 Broadway, New York. PLATT, JOHN, of Thorpe, Platt & Co., 97 Cedar street New York, N. Y. POMMER, EUGENE R., 384 Decatur street, Brooklyn, N. Y. POPPER, StEGFRIED, Chief Const. Imperial and Royal Austro-Hungarian Navy, Pola, Austria. POST, WALTER A., General Superintendent, Newport News S. B. & D. D. Co., Newport News, Va. POWELL, JOSEPH WRIGHT, Assistant Naval Constructor, U. S. N., the William Cramp & Sons Ship and Engine Building Co., Philadelphia, Pa. POWELL, WILLIAM T., 1699 31st st., Washington, D. C. Powers, WILBUR F., Hull Draughtsman, N. Y. Shipbuilding Co., Camden, N. I. PRATT, FRANCIS E., New York Representative. Almy Water Tube Boiler Co., 52 Broadway, New York, N. Y. 24

PAULI, SVEW, Assistant Naval Constructor,

PEABODY, CECIL H., Professor of Naval Architecture and Marine Engineering. Massachusetts Insti-

Peacock, Edward L., Chief Constructor, care Simon Lake, 3 B. Universitats, Str., N. W. 7,

Kockums Wharf, Malmo, Sweden.

tute of Technology, Boston, Mass.

Pray, Thomas, Jr., Consulting Engineer,
P. O. Box 2809, Boston, Mass.
Pusey, Charles W.,
Claymont, Del.

R

RAE, CHARLES W., Rear-Admiral and Engineer-inchief, U. S. Navy, Chief of the Bureau of Steam Engineering, Navy Department,

Washington, D. C. House Address, 1827 Jefferson Place.

RAYNAL, ALFRED H., Bureau of Steam Eng., Navy Yard, 1626 Riggs Place, N. W., Washington, D. C.

Reber, Louis E., M. S., Dean, School of Engineering, Pennsylvania State College, State College, Pa.

Rebolledo, Miguel, Ingeniero, Calle Sur, 34, No. 5,
Mexico City, Mexico.

REDGRAVE, DEWITT, C., Commander, U. S. N., (retired), Naval Academy, Annapolis, Md.

RICHARDS, CHARLES B., Prof. Mechanical Engineering, Sheffield Scientific School, Yale University, 227 Edwards street, New Haven, Conn.

RICHSON, CARL, Naval Constructor, Royal Swedish Navy, Riddarholmen 11, Stockholm, Sweden.

RITCHIE, JACOB S.. Supt. Engineer, Luckenbach
Towing and Wrecking Co., 129 Broad street,
New York City.

ROBERTS, EDWARD E., Prest., Roberts Safety Boiler
Co., 39-41 Cortlandt street, New York, N. Y.
Residence, Red Bank, N. J.

ROBERT, WILLIAM P., Naval Constructor, U. S. N., Navy Yard, New York.

ROBERTS, THOMAS GAINES, Naval Constructor,
U. S. N. Naval Station, New Orleans, La.
ROBINSON, EDWARD P., Supt. Atlantic Works,
70 Border street. East Boston, Mass.

ROBINSON, RICHARD H. M., Asst. Naval Constructor, U. S. N., Bu. C. & R., Navy Dept., Washington, D. C. ROBINSON, S. W., Professor Emeritus, Mech. Engineering, Ohio State University, 1353 Highland street, Columbus, O. ROCHE, GEORGE, W., Chief Engineer, U. S. N. (retired), 1304 McCullough street, Baltimore Md. ROCK, GEO. H., Naval Constructor, U. S. N., Navy Yard, Portsmouth, N. H. ROBLEER, CHARLES R., Rear-Admiral, U. S. N., 1434 Q street, N. W., Washington, D. C. ROBLKER, H. B., Mechanical Engineer, 41 Maiden Lane, New York, N. Y. ROSSELL. AXEL GUSTAF, Chief Draughtsman, Construction Dept., Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa. ROTTMER, HENRY E., Draughtsman, Bureau Construction and Repair, Navy Dept., Washington, D. C. Row, Reuben, Robert, Superintendent of Construction, U. S. Light House Service, Washington, D. C. House, 1703 West North avenue, Baltimore, Md. ROWEN, JOSEPH B., Fore River Shipbuilding Co., Quincy, Mass. ROWLAND, CHARLES B., Asst. Secretary and Engineer, Continental Iron Works, Brooklyn, N. Y. House, 320 Madison avenue, New York, N. Y. ROWLAND, T. F., Prest. Continental Iron Works. Brooklyn, New York. House, 329 Madison avenue, New York, N. Y. ROWLAND, T. F., JR., Sec'y Continental Iron Works, P. O. Station G., Brooklyn, N. Y. ROWLAND, WILLIAM, 811 East 9th st., New York, N. Y. RUHM. THOMAS F., Naval Constructor, U. S. N., Superintending Constructor, Moran Bros. Co., Seattle, Wash.

SABRI, S., Lieut.-Commander, Imperial Ottoman Navy, Constantinople, Turkey, On duty at The Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa. SADLER, HERBERT C., Prof. Naval Architecture. University Michigan, Ann Arbor, Mich. SADTLER, EDWIN BEALE, Naval Architect. The Harlan & Hollingsworth Co., Wilmington, Del. SAVAGE, SILAS ANTONY, Asst. Supt. Engineer, U. S. Light House Board, Washington, D. C. SCHOCK, EDSON B., Naval Architect, Yacht and Ship Broker, o Murray street, New York. SCHOFIELD, CHARLES, Naval Architect and Surveyor, 30 Main street, Tottenville, N. Y. SCHULZE, HENRY H., Fore River Shipbuilding Co., Quincy, Mass. 71 Broadway, New York. SCHWAB. CHARLES M., SCOTT, JOHN THOMAS, Supt. Union Iron Works' Shops, 1852 Geary street, San Francisco, Cal. SCRIBNER, EDWARD H., Commander, U. S. N. (retired), Navy Yard, Boston, Mass. SEABURY, CHARLES L., Gas Engine and 1'ower Co., and Chas. L. Seabury Company, Consolidated, Morris Heights, New York, N. Y. SEE. HORACE. Naval Architect and Marine Engineer. 1 Broadway, New York, N. Y. SELLERS. COLEMAN. Consulting Engineer, 1304 Stephen Girard Building, Philadelphia, Pa. SELLERS, COLEMAN, JR., Mechanical Engineer, 410 N. 33rd street, Philadelphia, Pa. SHERWOOD, JOHN ROBERTS. Vice-President and General Manager, Baltimore Steam Packet Co., Baltimore, Md. SKINNER, HARRY G., Prest. The Wm. Skinner & Sons'
S. B. & D. D Co., Foot of Cross st., Baltimore, Md.
SLOAN, HORACE T., Jr., Chief Draughtsman, Floating
Equipment, Pennsylvania R. R. Company,
Jersey City, N. J.
SLOANE, JOHN D.,
Dubuque, Iowa.
SMITH, A. CARY, Naval Architect,
oo Wall street, New York, N. Y.

SMITH, CARROLL S., New York Agent, Wm. Cramp & Sons S. & E. B. Co., 100 Broadway, New York, N. Y.

SMITH, FRANCIS B., Chief Engineer,
Pittsburg Steamship Co., Cleveland, O.

SMITH, G. EDWARD, Smith & Robinson, Engineers, 605 Provident Building, Philadelphia.

SMITH, GODFREY L., Draughtsman, Newport News S. B. & D. D. Company, Newport News, Va.

SMITH, HENRY G., General Manager,
Fore River Shipbuilding Co., Quincy, Mass.

SMITH, JOHN A. B., Rear Admiral, U. S. N. (retired)., 570 Greene avenue, Brooklyn, N. Y.

SMITH, SOMMERS N., Vice-Pres't and Gen'l Manager, Neafie & Levy S. & E. B. Co., Philadelphia, Pa.

SMITH, STUART FARRAR, Asst Naval Constructor, U. S. N., Naval Station, Cavite, P. I.

SMITH, WILLIAM BLACKBURN,
Engineer and Contractor, Perth Amboy, N. J.

SMITH, WM. POULTNEY, Mechanical and Marine Engineer, Wm. Cramp & Sons' S. & E. B. Co., Philadelphia. Pa.

SMITH, WM. STROTHER, Lieutenant-Commander, U. S. N., U. S. S. West Virginia, care Postmaster. N. Y.

SNEDDON, JAMES PRENTICE, Third Vice-President, Stirling Consolidated Boiler Co., Barberton, O.

Gio Ansaldo & C., Sestri Ponente, Italy. SPANGLER. HENRY W., Prof. Dynamic Engineering. University of Pennsylvania, Philadelphia, Pa. SPEAR, LAWRENCE, Vice-President, Electric Boat Co., Ouincy, Mass. SPERRY, AUSTIN, Naval Architect, Main Street Iron Works, 131 Main street, San Francisco, Cal. STAHL, A. W., Naval Constructor, U. S. N., Supt'g Constr. Newport News S. B. & D. D. Co., Newport News, Va. STEARNS, WILLIAM B., Naval Architect, Marblehead, Mass. STEVENS, JOHN A., Chief Engineer, Union Iron Works, San Francisco, Cal. STILLMAN, FRANCIS HILL, President, The Watson-Stillman Co., 46 Dey street, New York, N. Y. STOCKER, ROBERT, Naval Constructor, U. S. N., Navy Yard, Norfolk, Va. STRATTON, E. PLATT, Chief Engineer-Surveyor, American Bureau of Shipping, 66 & 70 Beaver street, New York, N. Y. STUART, SINCLAIR, Ship and Engine Surveyor, 16-18 Exchange Place, New York, N. Y. SUGITANI, YASNICHI, Ship Yard Manager, Mitsu Bishi Dock Yards & Engine Works, Nagasaki, Japan. SWAN, JAMES, New York Shipbuilding Co., Camden, N. I. SWENSON, WILLIAM H. C., Managing Director, Trondhjems Shipbuilding and Engineering Co., Trondhjems, Norway. SYLVEN, WALFRID, Supt. Eng. Marine Construction, U. S. Lighthouse Service, Light House Board, Washington, D. C. 20

SNOW, ELLIOT, Naval Constructor, U. S. N.,

SOLIANI, NABOR, Direxione, del Cantiere Navale.

Navy Yard, Boston, Mass,

TANDY, FRANK N., Marine Agent. 202 California st., San Francisco, Cal. TAWRESEY, JOHN G., Naval Constructor, U. S. N., Superintending Constructor, Union Iron Works, San Francisco, Cal. TAYLOR, DAVID W., Naval Constructor, U. S. N., Bureau Construction and Repair, Navy Dept., Washington, D. C. TAYLOR, STEVENSON, Vice-President, Quintard Iron Works, Foot of East 12th Street, New York. THAYER. IGNATIUS E., Naval Architect and Marine Engineer, 28 California street, San Francisco, Cal. THAYER, JR., HORACE HOLDEN, Chief Hull Draftsman, The Pusey & Jones, Wilmington, Del. THAYER, CHARLES H., Draughtsman, Office of Suptg. Constructor, Newport News S. B. & D. D. Co., Newport News, Va. THOMAS, CARL CLAPP, Prof. Marine Engineering. Cornell University, Ithaca, N. Y. THOMPSON, ARTHUR WELLINGTON. Mariners Harbor, Staten Island. THOMPSON, JAMES A., 1030 Cauldwell avenue, Bronx, N. Y. TOBEY, WILLIAM L., Mechanical Engineer, Lockwood Mfg. Co., 85 Sumner street, East Boston, Mass. TOBIN, J. A., Past Asst. Engineer, U. S. N. (retired), 32 Vine street, East Providence, R. I. TODD, WILLIAM HENRY, General Superintendent, John N. Robins Co., Erie Basin, Brooklyn. House, Hotel St. George, Brooklyn. TORREY, JOHN D., Draughtsman, Bureau C. & R.. Navy Dept., Washington, D. C. Towne, N. P., Chief Engineer, Wm, Cramp & Son's Ship and Engine Building Co., Philadelphia.

TROWBRIDGE, AMASA, Adjunct Professor, Mechanical
Engineering, Columbia University, New York.
TUSKA, GUSTAVE, R., Consulting Engineer,
62 William street. New York. N. Y.

U

UBSDELL, JOHN A., Great Lakes Engineering Works,
Detroit, Mich.

٧

VAN BUREN, JOHN, D.,

VAN VLECK, FRANK, Bureau of S. E., Navy Dept.,

Washington, D. C.

VARNEY, WILLIAM H., Naval Constructor, U. S. N., (retired), 712 N. Carey street, Baltimore, Md.

VARNEY, WILLIAM W., Mechanical Eng., Attorneyat-Law, 710 N. Carey street, Baltimore, Md.

VOLLMANN, CARL WILHELM, President, Linde British Refrigeration Co..

301 St. James street, Montreal, Can.

Volz, William E., Mechanical Engineer, Wheeler Condenser & Eng. Co., 42 Broadway, New York.

w

WADDINGTON, JAMES F., Draughtsman, The Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa House, Riverton, N. J.

WALKER, LOUIS W., Chief Hull Draughtsman, P. R. R. Floating Dept.,

Care Supt. M. P. P. R. R. Co., Jersey City, N. J. WALKER, PERLEY F., Prof. of Mechanical Engineer-

ing, University of Kansas, Lawrence, Kan.

WALLACE. JAMES C., President,

American Shipbuilding Company, Cleveland, Ohio.

WALLACE, W. CARLILE, Marine and Consulting Engineer, care of John Brown & Co., Ltd.,
22 Thames street, New York, N. Y.

_ -----

WALLACE WILLIAM M., Computer, Bureau
Construction and Repair, Navy Department,
616 18th street, N. W., Washington, D. C.
WALLEM, AXEL. B., Chief Draftsman, Engine Dept.,
N. Y. Shipbuilding Co., Camden, N. J.
WARD, CHARLES, Mechanical Engineer,
Charleston, Kanawha Co., W. Va.
WARD, CHARLES EDWIN, Supt of Ward Engineering
Works, Charleston, W. Va.
WARREN, BENJAMIN H., Alberene, Albemarle Co., Va.
WARREN, OGLE TAYLOR, Draughtsman,
Great Lakes Eng. Works, Detroit, Mich.
WARRINGTON, JAMES N., Mechanical Engineer,
Honolulu, Hawaii.
WATERS, J. W. LOWRY,
294 Carlton avenue, Brooklyn, N. Y.
WATT, RICHARD M., Naval Constructor, U. S. N.,
Superintending Constructor, Fore River Ship-
building Co., Quincy, Mass.
WATTERSON, WILLIAM WALLACE, Superintendent of
Construction, Pittsburg Steamship Co.,
Cleveland, O.
WATTS, PRILIP, Director of Naval Construction of
the British Admiralty,
10 Chelsea Embankment, London, S. W., Eng.
WEAVER, WILLIAM D., Mechanical Engineer,
55 Demarest avenue, Englewood, N. J.
WEBB, J. BEAVOR, Naval Architect
129 Front street, New York, N. Y.
WEBR, THOMAS E., Naval Constructor, U. S. N.,
(retired), Port Washington, Nassau Co., N. Y.
WEED, GRORGE E., President, Morgan Iron Works,
811 East 9th street, New York., N. Y.
WELLENKAMP, HERMAN, Royal Marine Shipmaster,
Wharf, Kiel, Germany.
38

WESTMACOTT, ALFRED, Managing Director, Westmacott, Stewart & Co., Ltd., St. Helens, Isle of Wight, Eng. WETHERBEE, CHARLES PHELPS, Asst. Supt., Bath Iron Works, Bath, Maine, WHEELER, CLIFTON HAROLD, C. H. Wheeler Condenser & Pump Co., Lehigh avenue and 18th street; residence, 521 Lincoln Drive, Pelham. Philadelphia. WHEELER, FREDERICK M., Mechanical Engineer, 150 Gates avenue, Montclair, N. J. WHEELER, HARRY, Suptg. Engineer, Lamport & Holt Line, Pier 8, Brooklyn, N. Y. WHITAKER, MORRIS M., Editorial Staff, "The Motor Boat," 1133 Broadway, New York. WHITHAM, JAY M., Mechanical Engineer. 607 Bullitt Building, Philadelphia, Pa. WHITNEY. EDWIN H., Supt., Eddy Valve Co., P. O. Box 205. Waterford, N. Y. WHITTELSEY, H. NEWTON, Williams, Whittelsey Co., Steinway, Long Island City, N. Y. WILEY. CLARENCE W., Supt. Engineer. Boston Tow Boat Co., Box 202, Seattle, Wash, WILKINSON, HENRI, Chief Surveyor, Bureau Veritas. 17 State street, New York, N. Y. WILLARD, CHARLES FRANKLIN, Instructor of Marine Engineering, Massachusetts Institute of Technology, Boston, Mass WILLIAMS, FAIRFAX, Naval Architect, "C-2" The Yale. 6th and Columbia streets, Seattle. Wash. WILLIAMSON, JOHN D., JR., Manager, Williamson Bros., Aramingo ave. and Cumberland st., Philadelphia, Pa. WILLIAMSON, WILLIAM C., Mechanical Engineer, Aramingo ave. and Cumberland st., Philadelphia, Pa. WILSON, ANDREW G., Marine Dept., Maryland Steel Co., 71 Broadway, New York, N. Y.

...

**125011, 0-10-02 2
1323 G street, N. W., Washington, D. C.
WINANT, WM. E., Leading Draftsman, C. & R. Dept.,
Navy Yard, Brooklyn, N. Y.
WINSHIP, JAMES G., Mechanical Engineer and Sales-
man, Geo. F. Blake Mfg. Co., 114 Liberty st., N. Y.
Residence, 468 Greene avenue, Brooklyn, N. Y.
WINTEINGHAM, H. C., Naval Architect,
Hudson Building, 32 Broadway, New York, N. Y.
Wood, Andrew, Supt., Pacific Iron Works,
Bridgeport, Conn.
WOOD, SIDNEY L., Asst. Engineer, Newport News
S. B. & D. D. Co., 232 49th st., Newport News, Va.
WOOD, WILLIAM J., Naval Architect, Ship Surveyor
and Consulting Engineer, 921 Postal Telegraph
Building, 280 La Salle street, Chicago, Ill.
WOODWARD, JOSEPH J., Naval Constructor, U. S. N.,
Bureau of Construction and Repair, Navy
Department, Washington, D. C.
Woody, William Henry, Jr., C. P. T. Co., 95 Liberty
street, New York. 2818 E. Franklin street,
Richmond, Va.
WORTHINGTON, CHARLES C., Manwalamink, Shawnee-
on-Delaware, Monroe Co., Pa.
Y
YAMAMOTO, NAGAKATO, Chief Draughtsman, Ship Dept.,
Mitsu Bishi Dock Yards & Engine Works,
Nagasaki, Japan.
YEOMANS, CLIPTON, Draughtsman,
Union Iron Works, San Francisco, Cal.
Young, James, Chief Draftsman, Hull Dept.,
N. Y. Shipbuilding Co., Camden, N. J.
Young, Philip M., Chief Draughtsman,
Eng. Dept., N. Y. Shipbuilding Co., Camden, N. J.
House, 1526 Arch street, Philadelphia, Pa.
34

WILSON, GEORGE HERBERT,

ZAHM, FRANK BAKER, Naval Constructor, U. S. N.,
Bureau of C. & R., Navy Dept., Washington, D. C.
ZEITER, FRIEDRICH, Lecturer on Marine Engineering,
at Technikum, Bulowstr 22, Bremen. Germany.
ZIRPEL, RUDOLPH, Supt of Construction,
U. S. Light House Service,
House, 523 3d street, N. E. Washington, D. C.



ASSOCIATES

Elizabeth, N. J.

Elizabeth, N. J.

ACKMERMAN, CHARLES,

ACKERMAN, WILLIAM W.,

Adams, Roger P., Draughtsman, Newport News
S. B. & D. D. Company, Newport News, Va.
ALDRICH, HERBERT L., President and Manager, Mar-
ine Engineering, Whitehall Building,
17 Battery Place, N. Y.
ALLAN, ERNEST A., Draughtsman, 97 Oak st., Bath, Maine.
ALLAND, KARL, E. W. Draughtsman,
N. Y. Shipbuilding Company, Camden, N. J.
House, 920 Penn street.
ALLEN, W. W., Consulting Engineer,
Rooms 1307-8, 24 Broad street New York.
AMORY, JOHN J., President, Gas Engine & Power Co.,
and Charles C. Seabury Co., Consolidated,
Morris Heights, N. Y.
ANCKER, WALTER, Supt. Floating Equipment, B. & O.
R. R. Company, Camden Station, Baltimore Md.
ANDRESEN, ELLIOTT I. G., Asst. Manager, Holzapfel's
Composition Co., 18 Broadway, New York.
ANDREWS, JACOB R., Hyde Windlass Co., Bath, Maine.
ARNOLD, CONWAY H., Captain, U. S. Navy,

BAILEY, JOHN E., Asst. Naval Constructor, U. S.
Navy, Navy Yard, Pensacola, Fla.
BAILEY, W. H., Agent, American Tube Works,
20 Gold street, New York.

care Navy Dept., Washington, D. C.

BALLS, WILLIAM H., Draughtsman,
C. & R. Dept, Navy Yard, League Island, Pa.
BARBEY, HENRY G., Yacht Designer,
52 Pine street, New York, N. Y.

BARNES, A. T., Consulting Engineer, Sharon, Mass. BARNES, W. H.,. Room 256, Broad street Station, Philadlphia, Pa. BARRE, JOSEPH, of Jos. Barre & Co., 25 Fulton street, New York, N. Y. BATES, GEORGE HAROLD, Chief Engineer, Burlee Dry Dock Co., Port Richmond, S. I. BATTIN, THOMAS WILSON, P. O. Box 2074, Philadelphia, Pa. BENT, FELTON, Supt., Solid Steel Casting Co., Chester, Overbrook, Pa. BENT, STEDMAN, Purchasing Agent, Maryland Steel Co., 306-311 Girard Building, Philadelphia, House, Overbrook, Pa. BICKFORD, ROBERT G., General Counsel, Newport News S. B. & D. D. Co., Newport News, Va. BISSET, GUY ALOYSIUS, Asst. Naval Constructor, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va. BLISS. JOHN LORD, John Bliss & Co., Manufacturer of Marine Chronometers and Nautical Instruments, 128 Front street, New York. BLOMBERG, CARL A., Marine Engineer, The Wm. Cramp & Sons' S. & B. E. Co., Philadelphia, Pa. BLOOMSBURG, HARRY BROWN, Draughtsman, Baltimore Shipbuilding and Dry Dock Co., House address, 425 N. Marey street, Baltimore, Md. Boas, EMIL L., General Manager, Hamburg-American Line, 37 Broadway, New York, N. Y. BORIE, ADOLPHE E., Vice-President, Bethlehem Steel Co., So. Bethlehem, Pa. BOUCHER, HORACE E., Mechanical and Model Shops, 105 Maiden Lane, New York. BOUTAKOFF. ALEXANDER G.. Commander, Imperial Russian Navy, Naval Attache, Russian Embassy, Washington, D. C.

Bowes, Jr., Thomas D., M. E. Scientific Dept., N. Y. Shipbuilding Co., Camden, N. J. BOYD, ROBERT JOHN, Draughtsman, U. S. N., C. & R. Dept., Navy Yard, House, 39 Lincoln avenue, Portsmouth, N. H. BOYD, WILLIAM, Second Leading Draughtsman, Cramps' Shipyard, Philadelphia. Bradfield, George K., Sales and Technical Dept., Vacuum Oil Co., 29 Broadway, New York. House, Hackensack, N. J. BRILL, PHILIP B., Calculating Draughtsman, Bu. C. & R., Navy Dept., Washington, D. C. BRINTON, FREDERICK S., Constructor, Marine Construction and Dry Dock Co., Mariner's Harbor, N. Y. Brown, WILLIAM L., Pickands, Brown & Co., The Rookery Building, Chicago, Ill. Brown, Wilson, 16 South Elliott Place, Brooklyn, N. Y. Brownson, WILLARD H., Rear Admiral, Navy Dept., BRUTON, JOHN F., Washington, D. C. Care of Fore River Shipbuilding Co., Quincy, Mass. BRYAN, HENRY F., Lieut, Commander U. S. N., "U. S. S. Alabama," Address: Care Navy Dept., Washington, D. C. BUCKELEW, CHARLES WILLIAM, Ship Designer, 126 W. 5th street, Plainfield, N. J. BUCKINGHAM, BENJAMIN H., Lieutenant-Commander, U. S. N. (retired), Cornwall, Pa. BURNHAM, JOHN W., Chief Carpenter, U. S. N., C. & R. Department, Navy Yard, Brooklyn, N. Y. BURTON, HERBERT, Draughtsman, Gas Engine & Power Company, Morris Heights, New York BUTTS, CHARLES SPOONER, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y. CARROLL, ROYAL PHELPS. Yachtsman. Knickerbocker Club, New York, N. Y.

CASSATT, ALEXANDER J., Broad Street Station,
Philadelphia, Pa.
CAVERLY, LEROY EUGENE, Hull Draughtsman,
Union Iron Works, San Francisco, Cal.
CHAMBERS, WASHINGTON I., Commander,
U. S. Navy, Navy Dept., Washington, D. C.
CHANDLER, LLOYD HORWITZ, Lieutenant Commander,
U. S. N., Bureau of Ordnance, Navy Dept.,
House, 2144 California Avenue (T Street) N. W.,
Washington, D. C.
CHASE, JOHN P., Draughtsman, Everett, Mass.
CHURCH, EDWIN F., JR., Box 622, Morganstown, W. Va.
CHURCH, WM. CONANT, Editor, Army and Navy
Journal, 99 Nassau street, New York, N. Y.
CLIFFORD, JAMES A., Electrical Engineer and General
Salesman, B. F. Sturtevant Co., Jamaica Plain,
Boston, Mass.
CLYDE, THOMAS, Ship Owner,
19 State street, New York, N. Y.
CLYDE, WILLIAM P., Ship Owner,
19 State street, New York, N. Y.
COATES, JOHN WESLEY, Warrant Machinist, U. S. N.,
U. S. S. Denver. Care of Postmaster, N. Y.
Cole, Winthrop, Draughtsman,
Bureau of S. E., Navy Dept., Washington, D. C.
Cox, Daniel, Draughtsman, Hull Department,
The Neafie & Levy S. & E. B. Co., Philadelphia, Pa.
CRAIG, JOSEPH E., Rear-Admiral, U. S. N.,
Navy Yard, League Island, Pa.
CRANE ALEXIS, New York Manager and Special Expert
Ship Equipment, Art Metal Construction Co.,
Ship Equipment, Art Metal Construction Co., 346 Broadway, New York, N. Y.

Cox, Leonard Martin, Civil Engineer, N. S. N., Bureau of Yards and Docks, Navy Dept., Washington, D. C.

CROSS, FRANK H., Draughtsman,

151 East 21st street, New York, N. Y. Cushing, Nicholas, Care United States Shipbuilding Company, 41-43 Cedar street, New York, N. Y.

D

DALTON, HENRY G., Managing Partner, Pickands,
Mather & Co., Western Reserve Bldg., Cleveland, O.
DAVIDS, WILLIAM CULVER, Mechanical and Construct-

ing Engineer, 242 Donaldson avenue, Rutherford, New Jersey.

DELIN, KARL, ERIC, Draughtsman,

470 Morris avenue, Elizabeth, N. J.

Deming, Richard, Care United States Shipbuilding
Co., 41-43 Cedar street, New York, N. Y.

DENISE, EDWIN S., Marine Dept., Deane Steam

Pump Co., 133 Liberty street, New York, N. Y. Dick, Thomas B., 634 York st., Vallejo, Solano Co., Cal. Dickie, James Spiers, Draughtsman,

Transport Service, San Mateo, Cal. Dimock. Wm. De Wolf, Agent,

New York Shipbuilding Co., 1 Broadway, New York.
Dock, Herman, Mechanical Engineer, Wyncote, Pa.
Dolan, Thomas, Director, Wm. Cramp & Sons' S. &

E. B. Co., U. G. I. Building, Philadelphia, Pa.

DOMBAUGH, HARRY M., Commander.

U. S. N., Naval War College, Newport, R. I. Donaldson, Henry F.,

Flatiron Bldg., Madison Square, New York, N. Y. Donovan, Richard J., Chief Draughtsman,

Columbia Iron Works, St. Clair, Michigan. Downey, Wallace, Townsend-Downey

Shipbuilding Co., Shooter's Island, N. Y.

DRAKE, FRANKLYN J., Captain, U. S. N.,
U. S. S. "Wisconsin," Asiatic Station,
Care Postmaster, San Francisco, Cal.
DUBOSE, WILLIAM GUNNELL, Assistant Naval Constructor, U. S. N., Naval Station, Cavite, P. I.
Duncan, Wm. B., Jr., Havemeyer Bldg., Cortlandt st., New York, N. Y
DUNTLEY, JOHN WHEELER, President, Chicago Pneu- matic Tool Co., 1019 Fisher Building, Chicago, Ill
Ε
EATON, JAMES W., General Manager and Treasurer,

EATON, JAMES W., General Manager and Treasurer, New York Kerosene Oil Engine Co., 31 Burling Slip, New York, N. Y.

ECKERT, LOUIS,

Fore River Shipbuilding Co., Quincy, Mass. EGGERT, ERNEST FREDERICE, Assistant Naval
Constructor, U. S. N., N. Y. Shipbuilding Co.,

Camden, N. J.

ELMQUIST, E., Naval Constructor, Swedish Navy, Carlskrona, Sweden,

ETTER, HARRY B., Designing Draughtsman,
Wm. Cramp & Sons' S. & E. B. Co.,
2326 N. 17th street, Philadelphia, Pa.

2326 N. 17th street, Philadelphia, Pa Evans. Robley. D., Rear-Admiral, U. S. N.,

EVANS, ROBLEY, D., Rear-Admiral, U. S. N.,
324 Indiana avenue, Washington, D. C.

FARRINGTON, W. C., Manager, Southern Pacific Co.,
Pier 25 N. R., New York
FERGUSON, JR., WILLIAM BURDER, Assistant Naval
Constructor, U. S. N., Navy Yard, New York.

PFISTER, CARLE ERMANUS, Lieutenant, Royal Italian Navy, Naval Attache to the Italian Embassy, Washington, D. C.

FIELD, EDWARD P., Naval Architect and Engineer,
Maritime Building, New York, N. Y.

FROST, ELIHU B., Treasurer and Manager, Electric
Boat Co., 11 Pine street, New York, N. Y.
FURER, JULIUS AUGUSTUS, Assistant Naval Constructor, N. S. N., Navy Yard, New York.

G

GANTT, HENRY L., Mechanical Engineer, 65 Summit street, Pawtucket, R. I. GARDINER, GEORGE N., 15 William st., New York, N. Y. GARDINER, GEORGE N., JR., Member of George N. Gardiner & Son, 15 William st., New York, N. Y. GARTLEY, ALONZO, General Manager, Hawaiian Electric Company, Honolulu. H. I. 1 Broadway, New York. GAUSE, JOHN RODNEY, GILLIS, JAMES H., Commodore, U. S. N. (retired), Melbourne Beach, Fla. GOODRICH, ALBERT W., President Goodrich Transportation Co., Foot of Michigan avenue Caicago, Ill. GOULDER, HARVEY D., Proctor in Admiralty, 816 Perry-Payne Building, Cleveland, O. GREENE, S. CUYLER, Draughtsman, Hvde Windlass Co., P. O. Box 1015, Bath. Me. GRIFFIN. EUGENE. Vice-President. General Electric Co., 44 Broad street, New York, N. Y. GRISCOM, CLEMENT A., JR., 5 Nassau st., New York, N. Y. GRISCOM, RODMAN E., Land Title Bldg., Philadelphia, Pa.

GROVE, HENRY S., President, The Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa. Guillaudue, William Leggett, President and General Manager, Old Dominion Steamship Co.,

81 to 85 Beach street, New York.

н

Hagstrom, O. P., Leading Draughtsman,
Newport News S. B. & D. D. Co.,
P. O. Box 628, Newport News, Va.

HALL, FRANK DAVID, Assistant Naval Constructor, U. S. N., Assistant to the Superintending Con- structor, Cramps Shipyard, Philadelphia.
HANSCOM, ISAIAH CLIFFORD, Draughtsman, Navy Yard, Portsmauth, N. H.
Hebbinghaus, Hans Georg, Commander, Imperial German Navy,, Naval Attache, German Embassy, Washington, D. C.
HEDSTROM, BERNARD, Hull Draughtsman, N. Y. Shipbuilding Co., Camden, N. J.
HENRY, SIDNEY MORGAN, Assistant Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.
HENRY, WILLIAM P., 204 West 55th st., New York, N. Y.
Hepburn, Frederic, Passaic, N. J.
HERRIMAN, HORATIO NELSON, Surveyor to Great Lakes Register & Bureau Neritas, Cleveland, O.
HILL, EBENEZER, Norwalk Iron Works Co., S. Norwalk, Conn.
HILKEN, PAUL GERHARD L., 133 West Lanoole street, Baltimore, Md.
HIRSCH, FEODOR C., President, N. Y. Kerosene Oil Engine Co., 31 Burling Slip, New York, N. Y.
HOOPER, LOUIS MOSHER, Engineer, and Mechanical Expert, J. L. Mott Iron Works,
90 Beekman street, New York, N. Y.
Houston, Charles E., Draughtsman,
Neafie & Levy S. & E. B. Co., Philadelphia, Pa.
HUGHES, ALEXANDER, Asst. Draughtsman, Navy Yard,
Norfolk, 623 Jesserson street, Portsmouth, Va.
HUGHES, CHARLES HAYNES, Contracting Engineer,
904 Spruce street, Philadelphia, Pa.
HUMMEL, HOWARD H., 222 High street, Canton, Ohio.
Hype, John S., Bath Iron Works, Bath, Me.

IRELAND, ROBERT L., M. A. Hanna & Co.,

Cleveland, O. IRVING, WASHINGTON, 200 Pine st., San Francisco, Cal.

J

JACKSON, WM. ELBERT, Draughtsman,

C. & R. Dept., Navy Yard, Brooklyn, New York.

Jones, Frank Bowne, Yacht Agent and Ship Broker,

20 Broadway, New York.

JOY, RICHARD P.,

ROOMS I to 6 Newberry Building, Detroit, Mich.

JUPP, ALFRED, J., Agent, The Lukenheimer Co.,

26 Cortlandt street, New York, N. Y.

ĸ

KANE, JOHN F., Shipfitter,

72 Meserole avenue, Brooklyn, N. Y.

KATZENSTEIN, JACOB, Supt., L. Katzenstein & Co., 358 West street, New York, N. Y.

KATZENSTEIN, MARTIN L., Manager, Marine Dept., International Steam Pump Co.,

144 Liberty street, New York.

KEILHOLTZ, P. O., Sec'y and Supt.,

The United Electric Light and Power Co.,

Merchant's Bank Building, Baltimore, Md.

KELLER, OTTO B., with Keuffel & Esser Co.,

56 Manhattan avenue, New York, N. Y.

Kellogg, James W., Manager Marine Sales, General Electric Co., 10 Front street, Schenectady, N. Y.

KEMBLE, PARKER H., Consulting Engineer,

439 Albany street, Boston, Mass.

KEMPFF, Louis, Rear-Admiral, U. S. N. (retired), U. S. Navy Pay Office, San Francisco, Cal.

KIRCHOFF, C., Editor Iron Age,

232-238 William street, New York, N. Y.

LAMSON, PHILIP, Draughtsman, Hull Department, Newport News S. B. & D. D. Co., Newport News, Va. LANGWELL, CHARLES J., Estimator,

The Harlan and Hollingsworth Co., Wilmington, Del. LARKIN, FRANK PROVOOST, Draughtsman, Engineering Department, Newport News S. B. & D. D. Co.,

also 224 40th street, Newport News, Va.

LAWLEY, ARTHUR C., Draughtsman,

Geo. Lawley & Son Corp., 60 N st., So. Boston, Mass.

LAWRENCE, GEORGE E., Ship Draughtsman,

Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa. LAWTON. NEWBURY. D., 40 Wall street. New York. N. Y.

LINDSAY, JAMES G., SR. Member of James G.

Lindsay & Co., Arcade Building, Philadelphia, Pa. LITTLEFIELD, CHARLES EDWIN, Navigator,

School Ship "St. Mary's," Ft. E. 24th street, N. Y. LONGSTRETH, CHARLES, Vice-President, U. S. Metallic

Packing Co., 427 N. 13th street, Philadelphia, Pa. LORD, FREDERICK KISSAM, Draughtsman,

105 Lord avenue, Bayonne, N. J.

Bath Iron Works, Bath. Me. LORD, JOHN A., LOVELL, LEANDER N., of Borden & Lovell,

17 Battery Place, New York, N. Y.

LUNDIN, ANDREAS, P., Pacific Mail Steamship Company, San Francisco, Cal.

LYNN, JAMES J., Marine Salesman, General Electric Co. and Shelby Tube Co., 4 Butler street, Port Huron, Mich.

MABRY, CURTIS DARLING, Hull and Calculating draughtsman, Wm. Gardner, 1 Broadway, New York, House, 226 West Lincoln ave., Mount Vernon, N. Y. MAGOUN. F. P.

Atlas National Bank Building, Cincinnati, Ohio.

MARTIN, JULIUS, Master Electrician,

Equipment Dept., Navy Yard, Brooklyn, N. Y. House Address, 445 West 21st St., New York.

MASON, LEWIS ALBERT, Draughtsman,

504 N. Henry street, West Bay City, Mich.

MASON, NEWTON E., Rear-Admiral, U. S. N.,

Chief of the Bureau of Ordnance.

Navy Department, Washington, D. C.

Mathewson, Thomas S., Vice-Pres., and Mgr.

Marine Machine and Conveying Co.,

318 Broadway, New York, N. Y.

McCreery, Joseph, Senior Member, Joseph McCreery & Son, Infirmary Road, Toledo, Ohio.

McEntee, William, Assistant Naval Constructor,

U. S. N., Navy Yard, Mare Island, Cal. McGowan, Wm. Cullen, Asst. Draughtsman,

Dept. of C. & R., Navy Yard, Pensacola, Fla.

McGuire, James C., Consulting Engineer

1410 Havemeyer Bldg., 26 Cortlandt st.,

New York, N. Y.

McIlvain, Edward, M., President,
Bethlehem Steel Co., South Bethlehem, Pa.

MCINTYRE, EDWARD, McIntyre & Henderson, Shipbuilders, Ft. of Montgomery street, Baltimore, Md.

McKay, George Theodore, Stearns & McKay, Naval Architects and Yacht Builders, Marblehead, Mass.

McLean, Thomas, C., Captain, U. S. N., care of Navy Dept., Washington, D. C.

McMillan, Gilbert N., Gorham, H. H.

McQuesten, Fred, Vice-President, The George

McQuesten Company, 27 Kilby st., Boston, Mass. McQuilkin, George, Jr., Electrical Expert,

U. S. N., Elkton, Md.

MERK, JOHN E., Care The H. W. Johns-Manville Co., 100 William street, New York, N. Y. MEEK, WENTWORTH W., Naval Architect, P. O. Box 1132. Bath. Maine. MEIGS, JOHN F., Engineer of Ordnance, Bethlehem Steel Co., South Bethlehem, Pa. MILLARD, WALTER HENRY, Naval Architect, 32 Broadway, New York, N. Y. MILLER, JACOB W., President, Providence and Stonington S. S. Co., Pier 19, North River, New York. MILLER, THOMAS I., Captain, 475 East 29th street, Brooklyn, N. Y. MILLS, ISAAC BONNEY, Naval Architect, 15 Exchange street, Boston, Mass. MITCHELL, JOHN, Vessel Owner, Mitchell & Co., Rockefeller Building, Cleveland, O. MINUSE, ALFRED WYNN, Webb's Academy, Fordham Heights. New York, N. Y. Moore, Harrison, B., President N. Y. Lighterage and Transportation Co., 26 Broadway, New York, N. Y. MORGAN, EDWIN D., 100 Broadway, P. O. Box 706, New York, N. Y. MULROONEY, JOHN M., Great Lakes Register, Inc.,

N

Cleveland, O.

NEW, HARRY STEWART, Draughtsman,
353 Webster avenue, Long Island City, N. Y.

NEWBERRY, TRUMAN H., Assistant Secretary of the
Navy, Washington, D. C.

NIBLACK, ALBERT P., Lieut-Commander, U. S. N.,
Naval Station, Honolulu, Hawaii.

NILES, MARSTON,
149 Broadway, New York, N. Y.

NOLAN, JOHN J.,
Fore River Shipbuilding Co., Quincy, Mass.

NORTON, HAROLD F., Draughtsman, U. S. N.,
Newport News S. B. & D. D. Co.,
P. O. Box 702, Newport News, Va.
0
O'BRIEN, EDWARD C., President and General Manager,
Cuban and Pan-American Express Co.,
62 Broadway, New York, N. Y.
O'CONNOR. BERNARD F.,
3 Washington avenue, Brooklyn, N. Y.
ORCUTT, CALVIN, B., Prest. Newport News Shipbuild-
ing and Dry Dock Co., 1 Broadway,
New York, N. Y.
, b
PAINE, CECIL E., Engineer,
Hyde Windlass Co., Bath, Maine.
PATTISON, HUGH, care of Westinghouse-Church-
Kerr & Co., 10 Bridge street, N. Y.
PENDLETON, F. S., Manager, Pendleton Bros.,
Shipbuilders, Belfast, Me.
PERKINS, EDWIN ALAN, Naval Architect and
Engineer, 8-10 Bridge street, New York, N. Y.
Peterson, Otto L., 1 Broadway, New York, N. Y.
Petre, Axel E., General Manager,
Midvale Steel Co., Philadelphia, Pa.
PFISTER, CARLE ERMANUS, Lieutenant, Royal Italian
Navy, Naval Attache to the Italian Embassy,
Washington, D. C.
PHILLIPS, WILLIAM H., Manager, Marine Department,
F. W. Devoe & C. T. Reynolds Co.,
101 Fulton street, New York, N. Y.
PIERCE, WALTER LOUIS, Secy. and Gen. Manager,
Lidgerwood Manfg. Co., 96 Liberty street, New York, N. Y.
Pomeroy, L. R., Care General Electric Co.,
Description Verland Ve

POTTER. AUSTIN EVERETT, Consulting Marine Gasolene Engineer, Editor of "Power Boat News, o Murray street. New York. POWELSON, WILFRID VAN NESS, Manager, St. Louis

Electric & Power Co., St. Louis, Mo.

R

RANDLE, WILLIAM GEORGE, Superintendent. New York Shipbuilding Co., Camden, N. J. House, Chester, Pa.

RAVEN, ANTON A., President, American Bureau Shipping and Atlantic Mutual Insurance Co., 51 Wall street, New York, N. Y.

RAYMOND, CHARLES H., Mutual Life Insurance Co., 26 Liberty street, P. O. Box 37, New York, N. Y. RAYMOND, JAMES RICHARDSON, Raymond Releasing

Hook, Room 1017 State street, New York.

REA. SAMUEL. Fourth Vice-Pres., Pennsylvania R. R. Room 223. Broad street Station, Philadelphia, Pa. REED, HENRY S., 12 West 31st street, New York, N. Y. RICE, HENRY, Naval Architect and Consulting Engineer,

202 Main street, Buffalo, N. Y. RICHARDSON, EUGENE M., Vice-Pres.,

Sherwin-Williams Co., Cleveland, O.

ROACH, STEPHEN, W., Manager, Morgan Iron Works, Foot of East oth street, New York, N. Y.

ROBBINS. ROWLAND A., President. Manhattan Supply Co., 127 Franklin street, New York.

ROGERS, WALTER H., Draughtsman, Hull Construction, Hull Construction.

Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa. Ross, Charles, E., Engineer,

17 State street, New York, N. Y.

Rossow, Ernest Frederick, Draughtsman, C. & R. Dept., Navy Yard, Mare Island, 908 York street, Vallejo, Cal. ROWEN, JOHN H., Lieutenant, U. S. N., Asst. to Inspector of Machinery for U. S. S. "Rhode Island."

Fore River Shipbuilding Co., Quincy, Mass.

3

SABIN, ALVAH HORTON,

432 Sanford avenue, Flushing, N. Y.

SATTERLEE, HERBERT L., Late Lieutenant, U. S. N., 120 Broadway, New York, N. Y.

SAUNDERS, HERBERT B., Marine Surveyor and

Appraiser, 15 Whitehall street, New York.

SCHOOLER, CLIFFORD VANNICE, Asst. Draughtsman, Navy Yard, Norfolk,

511 County street, Portsmouth, Va.

SCHREIDT, FRANK, President,

Safety Cylinder Valve Co., Mansfield, Ohio.

SCHRIENER. WATSON. C., Draughtsman.

New York Shipbuilding Co., Camden, N. J. Residence, 1829 N. 12th street, Philadelphia. Pa.

SCOTT, FRANK,

Crosby Steam Gauge & Valve Co., 16 Dey street,

New York.

SCOTT. HENRY T., Room 45, Crocker Building, San Francisco, Cal.

SEBREE, URIEL, Captain, U. S. N.,

Naval Secretary, Light House Board, Dept. of Commerce and Labor, Washington, D. C.

SHACKFORD, WILLIAM GARDNER,

Retired Shipmaster, So. Orange, N. J.

SHOEMAKER, WILLIAM R., Lieutenant-Commander, U. S. N., Navy Dept., Washington, D. C.

SHIELDS, HENRY B., Draughtsman,

Office of the Superintending Constructor,

New York Shipbuilding Company, Camden, N. J. SMITH. ALEXANDER R., Pelham, N. Y. SMITH, ALFRED G., Sec.-Treas., N. Y. and Cuba Mail Steamship Co., 90 Wall street, New York, N. Y. SMITH, HAYDEN HOBART, Manager, Marine Dept.,

The Thresher Electric Co.,

Room 905, 17 Battery Place, New York, N. Y. Smith, Townsend, J., Hull Draughtsman, T. S. Marvel & Co., Newburgh, N. Y.

SNYDER, HENRY S., Secretary-Treasurer,

Bethlehem Steel Co., So. Bethlehem, Pa.

SPEARMAN, EDWARD M., Consulting Engineer

and Naval Architect, Knutsford, Cheshire, England.

SPRAGUE, F. J., Technical Director, Sprague Electric Co., 527 West 34th street, New York, N. Y.

STANTON, SAMUEL WARD, Publisher, Nautical Gazette, 156 Fifth avenue, New York, N. Y.

STARKE, FREDERICK C., 173 25th street, Milwaukee, Wis.

STEPHENS, WILLIAM P., Editor, Forest and Stream, 32d street and Avenue A, Bayonne, N. J.

STOKES, ANSON PHELPS, 100 William street, New York. SWANTON, HENRY AIKEN. Draughtsman.

1 Regent street, Boston, Mass.

T

TAFT, HARRISON, 36 West 37th street, New York.

TAMS, J. FREDERIC, Ship Broker and Marine Contractor, 52 Pine street, also 4 Lexington ave.,

New York N. V.

New York, N. Y.

THRESHER, ALFRED ADDISON, Proprietor,
Thresher Electric Co., Dayton, Ohio.

Toch, Henry M., Manufacturer of Marine Cements and Ship Bottom Paints,

320 Fifth avenue, New York, N. Y. Todt, Edward George, Vice-President and General

Manager, Gunnell Machine Co., Manitowoc, Wis.

TOWNSEND, GEORGE RICHARDS, Mechanical and Marine Engineer and Naval Architect, Power and Mining Machinery Company, Cudahy, Wis. TUCK, EDWARD G., Foreman in charge of Mold Loft, Eastern Shipbuilding Co., New London, Conn. TURNER, LOUIS HORATIO, Surveyor, Bureau Veritas, San Francisco, Cal.

v VANDERTOORN. WILLEN H., Holland-American Line, Rotterdam, Holland. VANDERBILT. AARON. Vice-President. Wheeler Condenser & Engineering Co., 42 Broadway, New York, N. Y. VAN DUZER, LOUIS S., Lieutenant-Comdr., U. S. N., care of Navy Dept., Washington, D. C.

VEIT, RICHARD C., . 26 Broadway, New York, N. Y. VREELAND, CHARLES EDWARD, Commander, U. S. N.,

808 Mills Building, Washington, D. C.

WALES. CHARLES M., 11 Broadway, New York, N. Y. WATERS, GEORGE HENRY, Secretary, F. A. Verdon Co., West New Brighton, S. I., N. Y. WATTS. HENRY C., President, International

Smokeless Powder and Chemical Co.,

850 Drexel Building, Philadelphia, Pa.

WEINZ, CHARLES J., 247 West 123d st., New York, N. Y. Wells, Roger, Jr., Lieut,-Commander, U. S. Navy,

care Navy Dept., Washington, D. C.

WEST, CHARLES CAMERON, Manager,

Manitowoc Dry Dock Co., Manitowoc, Wis. WEST, GORDON B., 65 Myrtle avenue, Brooklyn, N. Y. WHITE, WILLIAM P., Lieut. Commander, U. S. N., Care Navy Dept., Washington, D. C.

WHITE, GEORGE A., Asst. to Genl. Manager, Hudson River Day Line, Desbrosses Street Pier New York. WHITON, CHAUNCEY GILBERT, Treasurer and Agent. The New Bedford, Martha's Vineyard and Nantucket Steamboat Co., P. O. Box 284. 7 Commercial street, New Bedford, Mass WIERDSMA, JOHN R., Netherlands Steam Navigation Co., 30 Broadway, New York, N. Y. WILLIAMS, HENRY, Asst. Naval Constructor, U. S. N., Newport News Shipbuilding & Dry Dock Co., Newport News, Va. WILSON, GEORGE P., 1202 Land Title Bldg., Philadelphia, Pa. WISE, WILLIAM C., Rear-Admiral, U. S. N. (retired). Navy Dept., Washington, D. C. WITT, OSCAR FREDRIK, Hull Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va. WOLVIN, AUGUST B., Gen. Mgr., American S. S. Co. 303 Board of Trade Duluth, Minn. Wood, David, Draughtsman, C. & R. Dept., Navy Yard, New York. WOOD, HOWARD, 1016 Spruce street, Philadelphia, Pa., or Conshohocken, Pa. Woods, Allen D., Marine Engineer, C. R. R. of N. J., Jersey City, N. J. WOODWARD, CLARK HOWELL, Ensign, U. S. N., Navy Department, Washington, D. C. WRIGHT, ROBERT KEMP, P. O. Box 390, Caracas, Venezuela, WRIGHT, WILLIAM LLOYD, Draughtsman,

Bureau of C. & R., Navy Dept., Washington, D. C.

House, 1908 G street, N. W.

ZETTERMAN, AXEL E., Marine Engine and Boiler
Draughtsman, Fore River Shipbuilding Co.,
Quincy, Mass.



JUNIORS

Δ

Anderson, Robert Earle, C. E., Draughtsman, Dept. of C. & R., Navy Yard, New York.

В

BACON, HENRY DOUGLASS, Asst. to General Foreman,
New York Shipbuilding Co., Camden, N. J.
P. O. Riverton, N. J.

BAILEY, DANIEL, Ship Draughtsman, C. & R. Dept.,

Navy Yard, Brooklyn, N. Y. BAILEY, ROBERT W., Ship Draughtsman, C. & R. Dept.,

Navy Yard, Brooklyn, N. Y. BAUM, ARTHUR ELMO, Draughtsman, Huil Dept.,

Bath Iron Works, 95 Union street, Bath, Me. Berliner, Richard W., care V. J. Hedden & Sons Co.,

8 Colborne street, Toronto Canada.

BIMSON, JAMES A., Draughtsman, Engineering Dept.,
Bath Iron Works, Bath, Me.

BINLEY, WM. JR., Leading Ship Draughtsman,
Navy Yard, New York.

Bowen, Almon F., Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va.

BOYD, STEPHEN B., Ship Draughtsman,

C. &. R. Dept., Navy Yard, Boston,

20 Holden street, Malden, Mass.

BRAGG, Ross W., Draughtsman,

N. Y. Shipbuilding Co., Camden, N. J.

BRETTEVILLE, ALEXANDER DE, Manager Main St.

Iron Works, 131 Main street, San Francisco, Cal. BRINER, EMIL AMANDUS, M. E.,

438 Queen Lane, Germantown, Pa.

Brooks, Louis C., Master Electrician, C. & R. Dept.,
Navy Yard, Boston, Mass.

4	ı	٠	h

CASWELL, W. BENSON, Draughtsman, 269 W. 136th street, New York. CHASE, ARTHUR WILLEY, Asst. Draughtsman, U. S. N., P. O. Box 36, 321 56th street, Newport News, Va. CHRISTOPHERSEN. HERBERT HENSHAW. 7 Edgerton Terrace, East Orange, N. I. CLARK. REUBEN B., Naval Architect. E. H. Godshalk & Co., Philadelphia, Pa. CLARY, JOSEPH W., Draughtsman, Bureau of C. & R., Navy Department, Washington, D. C. CRAIN, JOHN J., Draughtsman, 36 Edison Park, Quincy, Mass. CRANE, FRANK H., Supt., Theo. Crane's Sons Dry Dock & Shipyard, Erie Basin, House, 295 Garfield Place, Brooklyn, N. Y. CREGIER, ABBOTT, M., Asst. in Mech. Engineering, Columbia University, New York, N. Y. House, 119 East Lincoln avenue, Mt. Vernon, N. Y. CROSBY, RALPH W., of Daniel Crosby & Son. Osterville, Mass. CUMMINGS, LEE H., Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va. CURTIS, ARTHUR V., Draughtsman, C. & R. Dept., Navy Yard, Washington, D. C. CUTLER. EDWARD OSGOOD. Draughtsman. Office of Superintendent of Construction, Bath Iron Works, Bath, Me.

DAMON, EDWARD ORNE, JR., office of Superintending

Constructor, Fore River Shipbuilding Co.,
Quincy Mass.

DAVIS, MATTHEWS ERASTUS, Asst. Foreman of Ships,
New York Shipbuilding Co., Camden, N. J.

House, 128 So. Broad street, Woodbury, N. J.

DAVIS, OLIVER M., 91 Miami avenue, Detroit, Mich. DEGRAW, HAROLD MASON, Draughtsman,

C. & R. Dept., Navy Yard, New York.

DONNELLY, PATRICK J., B. Sc. Draughtsman,

C. & R. Department, Navy Yard,

House, 159 Washington Park, Brooklyn, N. Y.

DOUGHERTY, HUGH,

C. & R. Dept., Navy Yard, Brooklyn, N. Y. House, 74 Manhattan ave., Jersey City Heights, N. J.

Ε

ENGERDT, JOHN ARNHOLD, Inspector Steam Turbines,
Inspection and Testing Dept., Westinghouse
Machine Co., P. O. Box 131, Braddock, Pa.

ELLIS, WALTER L., Draughtsman,

Hyde Windlass Co., Bath, Me.

.. 🚅

ERISMANN, MARTIN C., Chief Draughtsman,

Marine Construction and D. D. Co.,

Mariner's Harbor, N. Y.

Evans, John Lancaster, Ship Draughtsman, Bath Iron Works, P. O. Box 838, Bath, Me.

EWEN, ALBERT E., Draughtsman,

C. & R. Dept., Navy Yard, Brooklyn, N. Y.

F

FERNALD, BENJAMIN G., Sales Eng.,

Northern Electric Mfg. Co., 29 Broadway, N. Y.

FILS, ERNEST, Draughtsman,
John N. Robbins Co., Erie Basin, Brooklyn, N. Y.

FINKENAUR, WM. M., Engine Draughtsman,

Burlee Dry Dock Co., Port Richmond, S. I.

FISHER, LEE DAVID,, Chief Engineer,
Fisher Construction Co., Joliet, Ill.

FRIEBLE, JOHN F., Draughtsman,
272 W. 141st street, New York.

GRIESHABER, HUGO EUGENE, Chief Hull Draughtsman, House, 260 Shaw street, East Baintree, Mass. GROGAN, HARLEY HICHBORN, Asst. Draughtsman, Office of Supt. Constructor, N. Y. Shipbuilding Co., Camden, N. I. HACK. HENRY J., Draughtsman, New York Shipbuilding Co., 900 Federal street, Camden, N. I. HALL, FRANCIS GRANGER, JR.,

468 Willoughby avenue, Brooklyn, N. Y.

HAMMOND, JAY D., Draughtsman,

156 Richmond avenue, Port Richmond, N. Y. 198th street, Bedford Park, N. Y.

HAUPT, JOHN, HAYS, DAVID, Draughtsman, Old Dominion S. S. Co.,

81 Beach street, New York, N. Y.

HERBERT. JEROME P., Draughtsman. C. & R. Dept., Navy Yard, Norfolk, Va.

HEWINS, LYMAN FOSTER, Draughtsman,

C. & R. Dept., Navy Yard, Washington, D. C.

HIBBARD, HARRY LYMAN, Electrical Engineer.

Bu. C. & R. Navy Dept., Washington, D. C.

HUNNEWELL, FRED A., Chief Draughtsman, Office of Suptg. Constructor, N. Y. Shipbuilding Co.,

Camden, N. J.

HUNT, HERMAN REYNOLDS, Draughtsman, Office of Suptg. Constructor, Moran Brothers Co., Seattle, Wash.

HUSSEY, TAMES W., Naval Architect.

E. H. Godshalk and Co., Philadelphia, Pa.

HUSSEY, WM. FRANKLIN, Hull Draughtsman, Neafie & Levy S. & E. B. Co., Philadelphia, Pa.

JENKINS, SANFORD CUYLER, Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va. JENNINGS, ALFRED C., Hull Draughtsman,
Eastern Shipbuilding Co., New London Conn.
JONSON, HERMAN, Consulting and Contracting
Engineer, 79 E. 130th street, New York.
JOHNSON, EADS, Supt. of Construction,
U. S. Light House Service, Tompkinsville N. Y.

K

KEENAN, WALTER COOK, Draughtsman,
1034 Milan street, New Orleans, La.
KENNEY, Lewis H., Draughtsman,
Office of Inspector of Machinery, The Win.
Cramp & Sons S. &E. B. Co., Philadelphia, Pa.
KIMBALL, WALTER EVERAND, Asst. Draughtsman,

KIMBALL, WALTER EVERAND, Asst. Draughtsman,
U. S. N., Fore River Shipbuilding Co., Quincy,
No. 1 Robin Hood street, Roxbury, Mass.
KOON, SIDNEY GRAVES, Editor Marine Engineering,
17 Battery Place, New York.

KREER, JOHN G., With Marine Iron Works, Station A,
House, 1654 Buckingham Place, Chicago, Ill.
KROUT LUTURE W. Asst. Draughtsman Office of

KROUT, LUTHER W., Asst. Draughtsman, Office of Suptg Constructor, The Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa.

L

LEE, HAROLD, Draughtsman, Marine Construction & Dry Dock Co., Mariner's Harbor, N. Y. LEWIS, ARTHUR SCHULTZ, M. E., Mechanical Engineer in charge of Test Room, C. & R. Dept., Navy Yard, New York.

LEITCH, ALBERT CLARK, Draughtsman,
C. & R. Dept., Navy Yard, Brooklyn, N. Y.

Lesley, Everett P., Draughtsman, Experimental Model Basin, Navy Yard, Washington, D. C.

LOOMIS, ALLEN, Instructor of Naval Architecture, 923 So. State street, Ann Arbor, Mich. LOOS, CHARLES L., JR., Draughtsman, Great Lakes
Engineering Works, Detroit, Mich.
LUDERS, ALFRED E., Draughtsman, Tams, Lemoine
& Crane, 52 Pine street, New York, N. Y.
LUEHRS, DANIEL MICHAEL, Student Naval Architecture, 136 Chandler street, Boston, Mass.

M

MACHATTIE, WILLIAM, Foreman Builder,

Marine Engine & Machine Co., Harrison, N. J.

MAGER, EDWIN E., Draughtsman,

Bu. C. & R., Navy Dept., Washington, D. C. MARTIN, GILBERT DARLING, Draughtsman,

40 Harris avenue, Woonsocket, R. I.

McComb, Samuel Deems, Draughtsman,

47 Lafayette avenue, Port Richmond, N. Y. McCormack, James William,

J. L. Mott & Co., 88 Beekman street, New York. MEEKER, H. L., Draughtsman, C. & R. Dept.,

Navy Yard, House, 96 Etna street, Brooklyn, N. Y.

MERRILL, AMBROSE MOODY, Draughtsman,

the section of the se

C. & R. Dept., Navy Yard, New York.

MITCHELL, LELAND R., Marine Engine Draughtsman, Bath Iron Works, 476 Middle street, Bath, Me. MORRISON, CLARENCE LEE,

Evergreen Hall, Woodbury, N. J.

N

NEWELL, WILLIAM STARK, Bath, Maine.
NEWTON, WILLIAM BUXTON, Engine Draughtsman,
Bath Iron Works, 850 Washington st., Bath, Me.
NORTH, CHARLES A., JR., Draughtsman,

55 High street, Woodbury, N. J.

NORTON, WILLIAM J., General Manager, Federal Electric Co., 317 W. 42nd street, New York.

O'Donnell, Charles F., Boatbuilder, C. & R. Dept., Navy Yard,

House, 56 Russell street, Brooklyn, N. Y.

OSBORN, EDWARD B., Foreman with W. R. Osborn,

Croton-on-Hudson, N. Y.

OVERMAN, AUSTIN EVERETT, 429 Penn st., Camden, N. J.

P

PATTERSON, HAROLD W., Hull Draughtsman, Gas Engine & Power Co., and Charles L.

Seabury Co., Consolidated, Morris Heights, N. Y.

PIERCE, EDWARD EVERETT, Draughtsman,

New York Shipbuilding Co., Camden, N. J.

P.O. Box 281, Woodbury, N. J.

POTTER, JOSEPH S., Hull Draughtsman,

Gas Engine & Power Co., and Charles L.

Seabury Co., Consolidated, Morris Heights, N. Y.

PURDY, JAMES G., Chief Hull Draughtsman,

Gas Engine & Power Co. and Charles L.

Seabury Co., Consolidated, Morris Heights, N. Y.

Purver, Geo. M., Civil Engineer,
Passaic Steel Co., Paterson, N. J.

R

READ, WALTER AUGUSTINE, Draughtsman,

C. & R. Dept., Navy Yard, Brooklyn, N. Y.

RICE, WINTHROP M., Draughtsman,

Electric Launch Co., Bayonne, N. J.

ROBERTS, ARTHUR O., Draughtsman, Box No. 294,

Manchester, N. H.

S

SHERIDAM, RICHARD BRINSLEY, Draughtsman, Brown Hoisting Machinery Co.,

St. Clair street, Cleveland, O.

SIMPSON, ROBERT C., Naval Architect, 70 Long Wharf, Boston, Mass. SMITH, GRANVILLE, Hull Draughtsman, 3121 14th street, N. W., Washington, D. C. SMITH. TOSEPH DICKINSON CLAIR. Hartington, Neb. STANKE, WILLIAM, Draughtsman, Hoboken, N. J. House, 904 Garden street. STAPLES, HORACE A., Bridgeport Brass Co., Bridgeport, Conn. STEVENS, EDWIN A., JR., 68 Broad street, New York. STEWART. LEE R., In charge of Mold Loft. New York Shipbuilding Co., Camden, N. J. STONE. PRESTON S., Office of Suptg. Constructor. Moran Brothers Co., Seattle, Wash, STUART. DONALD. 85 Chambers street, New York. SULLIVAN, JOHN F., Draughtsman,

C. & R. Dept., Navy Yard, Brooklyn, N. Y.

SWASEY, A. LORING, of Swasey, Raymond & Page, Naval Architects and Engineers,

Colonial Building, Boston, Mass.

TAPPEN. ALEXANDER B., Draughtsman. 263 W. 73rd street, New York. TERRY. ARTHUR LINVILLE, JR., Draughtsman. P. O. Box 371, Woodbury, N. J. THURSTON, PERRY K., Draughtsman,

Bureau of S. E., Navy Dept., Washington, D. C. THUNBERG. ERNST. JR., Draughtsman, care of

A. F. Hok, Gugatan 16, Stockholm, Sweden.

TOWLE, HOWARD C., Standard Oil Co.,

26 Broadway, N. Y. TURNER, CHARLES C., Hull Draughtsman, George Lawley & Sons Corp., Boston, Mass.

House, 10 Charles street, Quincy, Mass,

U

UZELMEIER, WILLIAM, Marine Draughtsman,
Wm. Cramp & Sons Co., Philadelphia.
4436 Fleming street, Roxborough, Pa.

w

WASSILIEF, WASSILY W., Draughtsman,
L. Power & Co., Philadelphia, Pa.
WATTS, J. MURRAY, Secretary, The O. Sheldon Co.,

Yacht Builders, Neponset, Boston, Mass.

WEBB, THOMAS E., JR., Hull Draughtsman,

C. & R. Dept., Navy Yard, Brooklyn, N. Y. House, 218 82d street.

WHITAKER, FRANK B., Draughtsman, Naval Constructor's Office, Moran Bros. Co., Seattle Wash. WHITE, WARREN A., Draughtsman,

N. Y. Shipbuilding Co., Camden, N. J.

WHITE, WILLIAM WESLEY, Draughtsman,

1001 Union Trust Building, Baltimore, Md.

WHITEHOUSE, FREDERICK CHARLES, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

WIGHT, ROGER WILLARD,

Instructor in Physics, Pratt Institute, Brooklyn. WINTERBURN, CHARLES, Draughtsman,

Bu. C. & R., Navy Dept., Washington, D. C. WRIGHT. HENRY C., Jr., Hull Draughtsman.

Bath Iron Works, Bath, Me.

Y

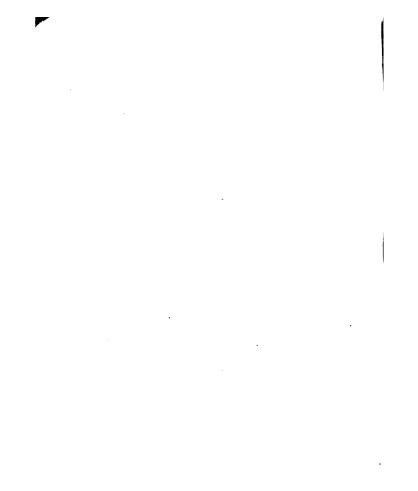
YEOMANS, CLYDE,

Cor. Mott & Hollywood avenues, Far Rockaway, N. Y.

YOUNG, WILLIAM J. J., Asst. Draughtsman,

Fore River Shipbuilding Co., Quincy,

Residence, 55 Freeman street, Wollaston, Mass.



CONSTITUTION

AND

BY-LAWS

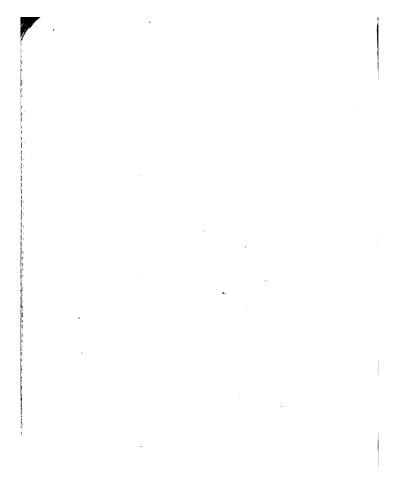
OF THE

Society of

Naval Architects

and

Marine Engineers



CONSTITUTION AND BY-LAWS

ARTICLE I.

Name and Object.

- I. The name of the Association shall be, "The Society of Naval Architects and Marine Engineers"
- 2. Its object shall be the promotion of the art of shipbuilding, commercial and naval.
- 3. In furtherance of this object, annual meetings shall be held for the reading and discussion of appropriate papers and interchange of professional ideas, thus making it possible to combine the results of experience and research on the part of shipbuilders, marine engineers, naval officers, yachtsmen, and those skilled in producing the material from which ships are built and equipped.

ARTICLE II.

Membership.

I. The Society shall consist of Members, Associates, Juniors, Honorary Members and Honorary Associates.

- 2. Members.—(I) The class of Members shall consist exclusively of Naval Architects, Marine and Mechanical Engineers, including Professors of Naval Architecture or Mechanical Engineering in colleges of established reputation.
- (2) A candidate for this class must not be less than twenty-five years of age and comply with the following regulations: He shall submit to the Council a statement showing that he has been engaged in the practice of his profession, in a responsible capacity, for at least three years, and setting forth the grounds upon which he bases his claim to membership. This statement shall be signed by three members, who shall certify to their personal knowledge of the candidate and approval of his statement.
- (3) In the case of persons not American citizens, the signatures of three members shall be required in confirmation of their personal knowledge of the candidate's scientific attainments.
- (4) If three-fourths of the members of the Council present are in favor of the admission of the candidate his name shall be submitted to the members of the Society at the next meeting; the voting to be by ballot, should a ballot be demanded.
- 3. Associates.—(1) The class of Associates shall consist of all persons who, by profession,

occupation, or scientific attainments, are qualified to discuss the qualities of a ship.

- (2) Candidates for this class shall submit to the Council a written statement of their qualifications for membership. If considered by three-fourths of the Council present duly qualified for associate membership their names shall be submitted to the Society at the next meeting, to be voted upon by the Members and Associates: voting to be by ballot, should a ballot be demanded.
- 4. The proportion of favorable votes for deciding the election of Members and Associates shall be at least four-fifths of the number recorded.
- 5. Juniors.—(1) The class of Juniors shall consist of graduates of technical schools of established reputation, or persons who have had not less than two years' practical experience in marine engine works or shipyards.
- (2) Candidates must be at least eighteen years of age and certify their intention to continue in the profession and become naval architects and marine engineers.
- (3) Juniors shall be eligible for transfer to the class of Members after fulfilling the necessary conditions.
 - (4) The admission of Juniors shall be by a

favorable vote of three-fourths of the members of the Council present.

- (5) Juniors shall have no voice in the government of the Society or admission of members.
- 6. Honorary Members and Honorary Associates.—The Council may elect Honorary Members and Honorary Associates, the total number not to exceed twenty-five. They shall be persons of acknowledged eminence in their profession upon whom the Council may see fit to confer an honorary distinction.

ARTICLE III.

Dues.

I. The entrance fees, payable on admission to the Society, shall be as follows:

Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates. no fees.

- 2. The annual dues shall be as follows:
- Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates, no dues.
- 3. A member transferred from one grade to another shall pay the difference between the entrance fees of the two grades, and his annual dues shall be those of the grade to which transferred.

- 4. The annual contributions shall be payable in advance on the first day of January. The Secretary shall notify each member of the amount due for the ensuing year at the time of giving notice for the annual meeting. On election each member shall pay his entrance fee and annual dues for the current year and be entitled to receive the proceedings of the annual meeting of the year during which he is elected.
- 5. Members and Associates can compound for all future dues and become Life Members or Life Associates by making a single payment of two hundred dollars and signing an agreement to conform to any future amendments to the Constitution and By-Laws.
- 6. Members are entitled to no return fees upon severing their connection with the Society.
- 7. Any member whose dues are more than three months in arrears shall be notified by the Secretary. Should his dues become six months in arrears he shall be again notified by the Secretary and his rights as a member suspended. Should his dues become one year in arrears the delinquent member shall forfeit his membership in the Society unless the Council may deem it expedient to extend the time of payment.
- 8. The Council may, in its discretion, temporarily suspend the annual payment of dues by any

member whose circumstances have become such as to make such payment impossible, and may, under similar circumstances, remit the whole or part of dues in arrears.

- 9. No name shall be entered on the rolls as Member, Associate or Junior, nor shall the privileges of membership be enjoyed until all dues shall have been paid; if the payment be delayed for more than six months from the date of election, the same shall be void unless the Council otherwise direct.
- 10. Should the expulsion of any member be judged expedient by five or more members, they must draw up and sign a proposal requesting such expulsion, delivering the same to the Secretary, to be laid before the Council.
- (2) If the Council do not find reason to concur in the proposal, no entry thereof shall appear in the minutes, nor shall any public discussion thereon be permitted.
- (3) If, however, the Council find the charges contained in the proposal for expulsion substantiated, the accused member shall be notified and given an opportunity to resign. If he avails himself of this privilege, no entry shall be made on the minutes nor public discussion of the case be permitted. But if he declines to resign and offers no satisfactory explanation of the charge,

the whole case shall be submitted to a special meeting of the Society.

(4) If two-thirds of the members at this special meeting (providing there be not less than twenty present) vote for expulsion, the Chairman of the meeting shall cause the accused to be expelled from the Society, and direct the Secretary to notify the accused of this action.

ARTICLE IV.

Officers.

- I. The officers of the Society shall consist of a President, Past Presidents, twelve Vice-Presidents, twenty-four Members of Council, and a Secretary and Treasurer.
- 2. Both Members and Associates are eligible for the offices of President, Vice-President and Members of Council, but three-fourths of the Council shall be Members
- 3. Prior to the date of the annual meeting of the Society of the year with which the term of the President expires, the Council shall nominate a candidate for the office of President, whose name shall be presented to the Society for election at the annual meeting. Any other candidate whose nomination, signed by at least sixty Members and Associates, shall have been submitted to the Secretary prior to the annual meeting shall

also be presented. The candidate receiving the highest number of votes shall be the President for the ensuing three years. The first President under this rule shall be elected at the annual meeting in 1906, and his term of office shall begin January 1st, 1907. The President shall not be eligible for election as his own successor.

- 4. The term of office of the Vice-Presidents shall be six years. Prior to the annual meeting in 1906 the Executive Committee shall by lot divide the present list of Vice-Presidents into six classes, so that the term of two of their number shall expire at the end of 1906, and two others at the end o f1907, and so on to the year 1911. The Vice-Presidents to fill the vacancies occurring each year in any class shall be elected by the Council from their own membership. Retiring Vice-Presidents shall be eligible for re-election.
- 5. The term of office of the Members of Council shall be three years. Prior to the annual meeting in 1906, the Executive Committee shall by lot divide the present list of Members of Council into three classes, each class consisting, as near as may be, of six Members and two Associates. The terms of office of the three classes shall expire at the end of the years 1906, 1907 and 1908 respectively. Retiring Members and Associates shall be eligible for re-election. Prior to

September 1st of each year, the Executive Committee shall prepare voting lists to fill the places of retiring Members and Associates, Members of the Council. The list shall contain the names of at least twelve Members and at least four Associates as candidates for the vacancies. The lists shall contain the names of all retiring Members and Associates who shall not have declined reelection, and of all candidates who shall have been nominated in writing by not less than tyenty members in the case of Members, and not less than twenty members and associates in the case of Associates. No nominations received by the Secretary after August 15th shall be considered. Should such nominations not be sufficient in number to fill up lists of at least twelve Members and four Associates as candidates, the Executive Committee shall add sufficient names to fill out these numbers. The voting lists shall be mailed as soon as practicable after September 1st of each year to Members and Associates. Each Member may vote for not more than six Members and two Associates for the Council, and each Associate may vote for not more than two Associates. The ballots shall be returned by mail to the Secretary and canvassed at the annual meeting. The six members receiving the highest votes shall be declared elected Members of Council, and the two

associates receiving the highest votes shall be declared electd Associates, Members of Council, for the term of three years.

- 6. A vacancy in the office of President shall be filled by ballot by the Council from the list of Vice-Presidents until the end of the year in which it occurs. At the annual meeting of that year a new President shall be elected for three years in the manner prescribed in paragraph 3. A vacancy in the office of Member of Council shall be filled by the Council for the unexpired portion of the term of the Member or Associate causing the vacancy.
- 7. The Presidents, Past Presidents and Vice-Presidents shall be ex-officio Members of Council.
- 8. The Council may hold meetings subject to the call of the President, as often as the interests of the Society may demand.
- 9. At all meetings of Council five members shall constitute a quorum.
- 10. The Secretary and Treasurer shall be elected annually by the Council, but may be removed at any time by a majority vote of the Council after due notice has been given.
- 11. The Secretary must be a Member of the Society.

ARTICLE V. Management.

- 1. (1) The President shall have general supervision over the affairs of the Societ, appoint special committees, and preside at the annual general meetings. He shall be ex-officio member of all committees.
- (2) In the absence of the President, the Vice-Presidents, in the order of seniority, shall preside and perform all the duties of the President.
- 2. The direct management of the Society shall be vested in an Executive Committee composed of five members of Council, elected annually by the Council, the President and Secretary of the Society being ex-officio members of the Committee. At least three of the five elective members of the Committee shall be Members of the Society.
- 3. The Executive Committee shall manage the affairs of the Society in conformity with the laws under which it is incorporated and the provisions of this Constitution. It shall direct the investment and care of the funds of the Society; make appropriations for specific purposes; arrange for the reading and publication of professional papers under such regulations as the Council may from time to time prescribe; take measures to advance the interests of the Society, and generally direct its affairs.

- 4. The Executive Committee shall make an annual report to the Society, transmitting the report of the Secretary and Treasurer, and of any special committee which may have been ordered.
- 5. (1) The Secretary shall be the Executive Officer of the Society under the immediate direction of the President and the Executive Committee.
- (2) He shall prepare the business for the annual meetings and record the proceedings thereof.
- (3) He shall be responsible for all expenditures and certify the accuracy of all bills or vouchers upon which money has been paid, and he shall conduct the correspondence of the Society and keep full records of the same.
- 6. The Treasurer shall see that all money due the Society is collected and carefully invested in such manner as the Executive Committee may direct. If considered advisable by the Council, the duties of Treasurer may be performed by the Secretary.
- 7. The accounts of the Secretary and Treasurer shall be audited annually by a special committee of three members of Council, appointed by the President of the Society.

ARTICLE VI.

Meetings.

- I. There shall be at least one annual general meeting of the Society for the reading and discussion of professional papers, election of officers for the ensuing year, and transaction of such other business as may be brought before it. The time and location of this meeting shall be determined by the Council at least three months prior to the date fixed.
- 2. Special meetings may be called by the Executive Committee at the request of twenty members, which request shall state the purpose of the meeting. The call for such meetings shall be issued ten days in advance, and shall state the purpose thereof. At these meetings thirty members shall constitute a quorum.
 - 3. The Society may adopt, from time to time, such rules as it may think proper for the order of business at its meetings.
 - 4. Special meetings of the Executive Committee may be held at any time, subject to the call of the Chairman; and four members shall constitute a quorum for the transaction of any business that may be properly brought before the Committee.

ARTICLE VII.

Amendments.

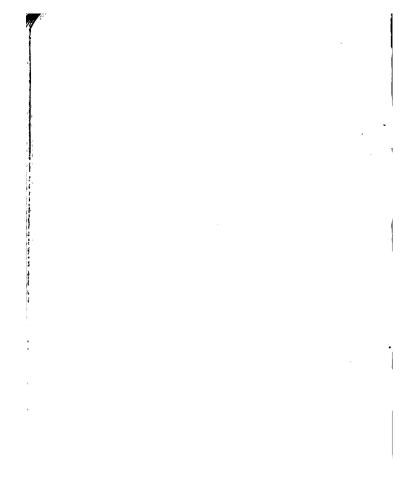
I. Proposed amendments to the Constitution must be reduced to writing and signed by not less than ten members. They shall be forwarded to the Secretary at least ten days before the annual general meeting, and shall be immediately forwarded to the Council for its consideration. If a majority of the Council approve the proposed amendment it shall be presented to the Society at the next ensuing general meeting for discussion; if approved by two-thirds of the members present, voting by ballot, if a ballot be demanded, it shall be adopted.

Society of Naval Architects and Marine Engineers

*FORM OF PROPOSAL OF MEMBER
Name in full
Date of Birth
Nationality
Post-Office Address
Date of Application
Professional position now
held, giving name and (
address of institution, firm or shipyard.
Brief statement of
technical train-
ing and profes-
sional experi-
ence, strict
attention being
paid to the by-
•
laws governing
applications for
admission to
membership.
• • • • • • • • • • • • • • • • • • • •
[See Constitution.]
I certify that the above statements are correct, and, if
elected, pledge myself to abide by the constitution and by-
laws as at present in force or hereafter established, and,
in the event of my ceasing to be a member, that I will
return for cancellation my certificate of membership in
the above society.
Signature of applicant
190
Having examined the above statement, we, the un-
dersigned, signify our approval thereof and recommend
Mrfor election as a Member.
Signatures of three
members.
"Same form for Associates and Juniors, except that
the approval of only two members are required for Asso-
ciates, and not any for Juniors.
0_

81

٠.



TRANSACTIONS

OF THE

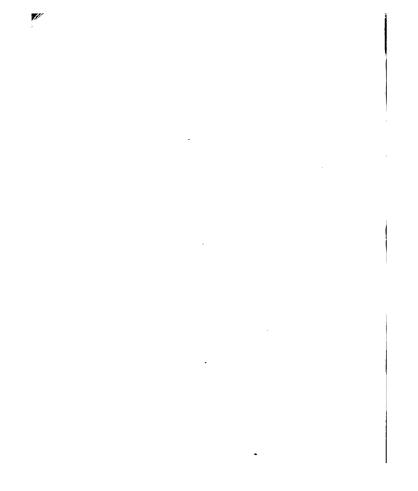
SOCIETY OF

NAVAL ARCHITECTS

AND

MARINE ENGINEERS

TABLE OF CONTENTS OF VOLUMES I TO XIII



VOLUME I.

288 Pages. 60 Plates and Drawings.

- "Evolution of the Atlantic Greyhound."
 Chas. H. Cramp, Esq., Pres., Wm. Cramp &
 Sons' Ship and Engine Building Co.
- "Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements."
 JOSEPH J. WOODWARD, Naval Constr. U. S. N.
- 3. "United States Treasury Rules for the Inspection of Machinery and Boilers."

 JAMES T. BOYD, Esq.
- "Production in the United States of Heavy Steel Engine, Gun and Armor Forgings." Russell W. Davenport, Esq.
- 5. "Coal Bunkers and Coaling Ship."
 ALBERT P. NIBLACK, Lieutenant, U. S. N.
- Steel Ships of the United States Navy."
 Theodore D. Wilson, Ex-Chief Constructor,
 U. S. N.
- "Notes on the Machinery of the New Vessels
 of the United States Navy."
 George W. Melville, Engineer-in-Chief, U.S. N.

8. "Comparative Performances of American and Foreign Freighting Ships—Our Superiority."

7

WM. W. BATES, Esq., late Commander of Navigation.

- "Some Thoughts on the Design of New York Ferry Boats."
 COL. EDWIN A. STEVENS, President, Hoboken Ferries.
- "The Law of Frictional Resistance."
 Prof. W. F. Durand, Cornell University.
- "Steam Yachts as Naval Auxiliaries in Time of War."
 WM. GARDNER, Esq.
- 12. "The Wetted Surface of Ships."

 DAVID W. TAYLOR, Naval Constructor, U. S. N.
- 13. "The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels."
 JAMES O'NEILL, Esq.
- 14. "The Development of Shipbuilding on the Great Lakes." JNO. F. PANKHURST, Esq.

VOLUME II.

346 Pages. 69 Plates and Drawings.

- "Some Suggestions of Professional Experience in connection with the Naval Construction of the Last Ten Years—1884-1894."
 RICHARD W. MEADE, Rear Admiral, U. S. N.
- The Use of Small Models for the Determination of Curves of Stability."
 Mon. E. Bertin, Director of the French Government School of Naval Design.
- "Some Obstacles to Shipbuilding and Owning in this Country."
 GEO. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco, Cal.
- Electricity on Shipboard—Its Present Position and Future Development."
 S. DANA GREENE, Esq.
- "Cellulose and Its Application to Warships." Mon. E. Cheneau, Philadelphia, Pa.
- The U. S. Triple-Screw Cruisers 'Columbia' and Minneapolis.'"
 GEORGE W. MELVILLE, Engineer-in-Chief, U. S. N.
- "A Dynamic Steam Engine Indicator Tester."
 Professor Cecil H. Peabody, and Asst. Professor
 E. F. Miller, Massachusetts Institute of Technology.

- 8. "Experience Gained with our New Steel
 Ships as Regards Care and Preservation."
 PHILIP HICHBORN, Chief Constructor, U. S. N.
- '9. "Present Status of Face-Hardened Armor."
 W. T. Sampson, Captain and Chief of Ordnance,
 U. S. N.
- 10. "Hvdraulic Power for Warships." ALBERT W. STAHL, Naval Constructor, U. S. N.
- II. "Notes on Launching."

 WILLIAM J. BAXTER, Naval Constructor, U. S. N.
- "Yachts in England and America."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- "Accessibility and Circulation of Water-Tube Boilers."
 L. D. Davis, Esq., M. E. President Davis-Farrar Co.
- "Recent Light-Draught Gunboats of the U. S. Navy."
 J. WOODWARD, Naval Constructor, U. S. N.
- 15. "An Approximate Formula for the Wetted Surface of Ships." Profs. W. F. DURAND and GEO. R. McDermott, Cornell University.

VOLUME III.

300 Pages. 57 Plates and Drawings.

- "American Maritime Development."
 Capt. Henry C. Taylor, U. S. N., President,
 Naval War College.
- "The Centreboard—Its Influence on Design; Its Value and Proper Use."
 WM. P. STEPHENS, ESQ.
- 3. "Rudder Experiments—U. S. S. 'Monterey.'"

 Elliott, Snow, Asst. Naval Constructor, U. S. N.
- "Aluminum—Its Alloys and Their Use in Ship Construction."
 J. C. McGuire, Esq., C. E.
- Methods and Forms for Certain Ship Calculations."
 D. W. TAYLOR, Naval Constructor, U. S. N.
- 6. "The Number of Longitudinal Intervals in Ship Computation, as Affecting the Accuracy of Integration for Displacement," and "Note on the Relation between Reduced and True Wetted Surface." Prof. W. F. DURAND, Cornell University.

- Recent Designs for Vessels for the U. S. Navy."
 Philip Hichborn, Chief Constructor, U. S. N.
- "Tactical Considerations Involved in War Ship Design."
 ALBERT P. NIBLACK, Lieutenant, U. S. N.
- Engineering Research in the Navy."
 Prof. Wm. S. Aldrich, University of West
 Virginia.
- "Performance of the Twin-Screw Steamer 'City of Lowell."
 Prof. James E. Denton, Stevens Institute of Technology.
- II. "The Ventilation of Ships."
 F. B. Dowst, Esq., M. E.
- 12. "An Experimental Test of the Armored Side of the U. S. S. 'Iowa.'" ALBERT W. STAHL, Naval Constructor, U. S. N.

VOLUME IV.

209 Pages. 58 Plates and Drawings.

PAPERS.

 Test of an Experimental Turret of the U. S. Battleship 'Massachusetts.'"
 Commodore W. T. Sampson, U. S. N., Chief of Bureau of Ordnance, Navy Department, Washington, D. C.

- 2. "Steel Canal Boats."

 LEWIS NIXON, Manager, Crescent Shipyard,
 Elizabeth, N. J.
- "Naval Practice in Ship Rivets and Riveting."
 Naval Constructor J. H. LINNARD. U. S. N.
- "American Fire-Boats."
 H. DeB. Parsons, Marine Engineer.
- 5. "Corn-Pith Cellulose."

 HENRY W. CRAMP, Vice-President, Wm. Cramp & Sons, Philadelphia, Pa.
- 6. "The New Battle-Ships."
 Chief Constructor PHILIP HICHBORN, U. S. N.
- "Speed Trials of a Screw-Propelled Ferry-Boat."
 F. L. DUBOSOUE. Engineer. Floating Equipment.
 - F. L. DUBOSQUE, Engineer, Floating Equipment, Pennsylvania Railroad.
- "Hydraulic Sheers for Lifting One Hundred and Twenty-Five Tons."
 FRANK B. KING, Marine Engineer and Naval Architect.
- "A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability."
 Hugo Hammar, Naval Architect.
- "Stability of a Ship in Damaged Condition."
 Prof. James Swan, Massachusetts Institute of Technology.

11. "Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battle-Ships."

Assistant Naval Constructor T. F. Ruhm, U. S. N.

"Screw Propellers."
 Prof. Geo. R. McDermott, Cornell University.

VOLUME V.

.247 Pages. 67 Plates and Drawings.

- "Water-Tight Bulkhead Doors—the 'Long Arm' System on the U. S. S. 'Chicago.'"
 WM. BARNUM COWLES, Esq.
- Regulations for Loading Vessels."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- 3. "Torpedo Boat Design."
 Asst. Naval Constructor H. G. GILLMOR, U.S. N.
- 4. "The Commerce of the Great Lakes."
 C. E. Wheeler, Esq.
- 5. "Progressive Trials of the 'Guardian.'"
 Prof. C. H. Peabody, Mass. Institute Technology.
- "An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers." Preliminary paper. Prof. W. F. DURAND, Cornell University.

"Some Notes on the Speed Trials and Experience in Commission of our New Battleships."

Chief Constructor PHILIP HICHBORN, U. S. N.

- "Use of Water Ballast for Colliers in the Pacific Coast Trade."
 Hugo P. Frear, Esq., Naval Architect.
- 9. "Estimated Weights of Machinery."
 Prof. Geo. R. McDermott, Cornell University.
- 10. "Navy Yard Expenses." Naval Constructor W. J. Baxter, U. S. N.
- "Pneumatic Steering Gear—as Applied to the U. S. Monitor 'Terror.'"
 H. A. SPILLER, Esq.

VOLUME VI.

217 Pages. 120 Plates and Drawings.

- I. "The Standard Navy Boats."
 ARTHUR B. CASSIDY, Esq.
- Bilge Keels and Rolling Experiments—
 U. S. S. 'Oregon.'"
 Asst. Naval Constructor LAWRENCE SPEAR,
 U. S. N.

Portable Pneumatic Riveters in Shipbuilding."

> W. I. BABCOCK, Esq., Manager, Chicago Shipbuilding Co.

- Torpedo Boat Destroyers for Sea Service. with Special Reference to the Conditions that Prevail on the Pacific Coast."
 - G. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco.

Topical Discussion—

The utility of Torpedo Boats, and has the Sub-Marine Boat a Place?

- "Steam Economy Test of a Unique Form of Feed Pump."
 - F. M. WHEELER, Esq.
- 6. "The Steam Yacht as a Naval Auxiliary." WILLIAM P. STEPHENS, Esq.
- "Designs of the New Vessels for the U. S. 7. Navv."
 - Chief Constructor PHILIP HICHBORN, U. S. N.
- "Methods of Securing Water-Tight Work." 8. Asst. Naval Constructor H. G. SMITH. U. S. N.
- o. "Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms." Naval Constructor J. J. WOODWARD, U. S. N.
- "An Electrically Operated 150-Ton Revolv-IO. ing Derrick."

WALTER A. Post, Esq., Manager, Newport News Shipbuilding and Dry Dock Co.

 "Stability of a Battleship under Damaged Conditions."

Prof. Cecil H. Peabody, Massachusetts Institute of Technology.

Topical Discussion-

- Ist.—Under the circumstances of a blockade at Santiago, which was the more economical method of maintaining the boilers in readiness for immediate action—banking the fires or keeping them spread but very thin?
- 2d.—As a result of experience on the Blockade, what particular points about the machinery were most likely to give trouble, and what could be done to prevent a recurrence of such trouble?

VOLUME VII.

285 Pages. 105 Plates and Drawings.

- I. "Coaling Vessels at Sea."
 Spencer Miller, Esq.
- "Causes for the Adoption of Water-Tube Boilers in the U. S. Navy." Engineer-in-Chief Geo. W. Melville, U. S. N.

- "Suggestions as to Improved Appliances for Launching Ships' Boats."
 JOHN HYSLOP, Esq.
- The Electric Plants of the Battleships Kearsarge and Kentucky."
 Naval Constructor J. J. WOODWARD, U. S. N.
- The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted."

GEO. W. DICKIE, Esq., Manager, Union Iron Works.

- 6. "Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results."
 H. F. NORTON, Esq.
- "Notes on the Sheathing of the U. S. S. Chesapeake."
 Naval Constructor LLOYD BANKSON, U. S. N.
- "System of Work in a Great Lake Shipyard."
 W. I. Babcock, Esq., Manager, Chicago Shipbuilding Co.
- "Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard."
 JAMES DICKIE, Esq., Superintendent, Union Iron Works.
- 10. "Designs for the Denver Class Sheathed Protected Cruisers." Chief Constructor Philip Hichborn, U. S. N.

- II. "Novelties in Ship Fittings."

 Asst. Naval Constructor R. M. WATT, U. S. N.
- 12. "Progressive Speed Trials of the U. S. S. Manning."
 Prof. C. H. Peabody, Massachusetts Institute Technology.
- "Tactical Considerations Involved in Torpedo-Boat Design."
 Lieut. A. P. Niblack, U. S. N.
- 14. "On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over."

 Prof. Wm. F. Durand, Sibley College, Cornell University.

VOLUME VIII.

275 Pages. 151 Plates and Drawings.

- "Capacity Test of a Unique Form of Air Pump."
 F. Meriam Wheeler, Esq.
- "Interchangeability of Units for Marine Work."
 W. D. FORBES, Esq.

 "The Performance of the Imperial Russian Cruiser Variag."
 Chas. H. Cramp, Esq., Pres. Wm. Cramp & Sons, Ship and Engine Building Co., Philadelphia, Pa.

 "The United States Experimental Model Basin."
 Naval Constructor D. W. Taylor, U. S. N.

- The Composition and Classification of Paints and Varnishes."
 Prof. A. H. Sabin.
- Tests of the Electric Plants of the Battleships Kearsarge and Kentucky." Naval Constructor J. J. WOODWARD, U. S. N.
- "Coaling of the U. S. S. Massachusetts at Sea."
 SPENCER MILLER, Esq.
- "Notes on Recent Improvements in Foreign Shipbuilding Plants."
 Asst. Naval Constructor H. G. GILLMOR, U.S.N.
- 9. "Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the Production of the Largest Class of Ocean Passenger and Freight Steamships?

GEO. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco.

- 10. "Classification Rules."
 THEODORE LUCAS , Esq.
- II. "Recent Designs of Battleships and Cruisers of the U. S. N." Chief Constructor Philip Hichborn, U. S. N.
- 12. "A Comparison of the Contract Prices of our Naval Vessels."
 HARRISON, S. TAFT, Esq.
- "Launch of a Cruiser and a Battleship."
 JAMES DICKIE, Esq., Supt., Union Iron Works, San Francisco.
- 14. "Safety of Torpedo Boats at Sea and in Action Under Various Conditions." Naval Constructor LLOYD BANKSON, U. S. N.

VOLUME IX.

251 Pages. 58 Plates and Drawings.

PAPERS.

- I. "Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo.'"

 FRANK E. KIRBY, Esq.
- 2. "Effect of Variation of Dimensions on the Stresses in a Ship's Structure."

 Professor H. C. Sadler, Esq.

- "Power Consumed in Propelling the Whitehead Torpedo at Various Speeds." FRANK M. LEAVITT, Esq.
- The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
 Naval Constructor D. W. TAYLOR, U. S. N.
- The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
 Kear Admiral George W. Melville, U. S. N.
- "A Brief Comparison of Recent Battleship Designs."
 Naval Constructor H. G. GILLMOR, U. S. N.
- 7. "Changes in Torpedo Boat Designs." Charles P. Wetherber, Esq.
- "Late Developments in Armor and Ordnance."
 J. F. Meigs, Esq.
- 9. "Recent Experiments in Attacking Armor with High Explosive Shells."

 Captain E. B. Babbirt, Ordnance Dept., U. S. A.
- 10. "Some Notes on Tidal Corrections." Messrs. E. A. STEVENS, and C. P. PAULDING.
- II. "Side Launch of Torpedo Boats and Torpedo Boat Destroyers."
 Asst. Naval Constructor Wm. G. GROESBECK, U. S. N.

VOLUME X.

377 Pages. 108 Plates and Drawings.

PAPERS.

- Technical Training for Shipbuilders." HENRY S. PRITCHETT, Ph.D., LL.D.
- Progressive Trials of the Screw Ferry Boat 'Edgewater.'"
 EDWIN A. STEVENS, and CHARLES P. PAULDING.
- 3. "The Possible and Probable Future Developments in the Use of Electricity on Board
 Ships."
 - F. O. BLACKWELL, Esq.
- "The Preliminary Official Trial of the U. S. B. S. 'Maine.'"
 Asst. Naval Constructor J. W. Powell, U. S.
 Navy.
- The Water-tube Boiler in the American Mercantile Marine."
 WM. A. FAIRBURN, Esq.
- "Longitudinal Bending Stress on Damaged Ships."
 GEORGE C. COOK, Esq.
- "Some Problems on the Surfaces of Buoyancy and of Waterlines."
 Professor Cecil H. Peabody.

 "Vibration of Steamships; with Special Reference to those of the 2d and Higher Periods."

> Rear-Admiral George W. Melville, Engineerin-Chief. U. S. Navy.

- The Development of Modern Ordnance and Armor in the United States." Rear-Admiral Charles O'Neil, Chief of the Bureau of Ordnance, U. S. Navy.
- 10. "Remarks on the New Designs for Naval Vesels." Rear-Admiral Francis T. Bowles, Chief Con-
- II. "The Tactics of the Gun." Lieut.-Commander Albert P. Niblack, U. S. N.

structor, U. S. Navy.

- 12. "Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States."
 GEORGE W. DICKIE, Esq.
- "Submarine Torpedo Boats; Past, Present and Future."
 LAWRENCE Y. SPEAR, Esq.
- "Measurement Rules for Yachts, with Special Reference to Racing Conditions."
 F. W. BELKNAP, Esq.
- "The Balancing of Valve Gears." (Prize Competition Paper.)
 LUTHER D. LOVEKIN, Esq.

VOLUME XI.

353 Pages. 148 Plates and Drawings.

PAPERS.

- I. "Progressive Trial of Ferry Boat 'Bremen.'"
 EDWIN A. STEVENS, Esq.
- 2. "Notes on the Arangements and Construction of Steam Pipes and their Connections."
 R. C. Monteagle, Esq.
- 3. "Gasoline Engines for Marine Propulsion."
 D. H. Cox, Esq.
- 4. "Some Thoughts on the Design of Modern Steam Yachts."

 CLINTON H. CRANE, Esq.
- Watertight Subdivision of Warships."
 Commander Wm. Hovgaard, Royal Danish Navy.
- "Non-corrosive Nickel Steel Boiler Tubes."
 Albert Ladd Colby, Esq.
- "Curves of Form of the Initial Condition." GEORGE C. COOK, Esq.
- "The Metric System in Relation to the Shipbuilding Industry in the United States." Naval Constructor J. H. Linnard, U. S. N.

- Electricity in Manufacturing Plants."
 W. M. McFarland, Esq.
- 10. "Description of the Design and Building of the 21,000-ton Steamships 'Minnesota' and 'Dakota.'"
 CHARLES R. HANSCOM, Esq.
- II. "Ships' Forms Derived by Formulæ."

 Naval Constructor D. W. TAYLOR, U. S. N.
- "Displacement and Stability Calculations."
 WALTER S. LELAND, Esq.
- "Graphic Calculations of a Ship's Stability." Professor M. H. BAUER.
- 14. "Notes on the Launching of the Cruiser 'Chattanooga.'"M. S. CHACE, Esq.
- 15. "Notes on Side Launchings."

 Asst. Naval Constructor WM. G. GROESBECK,
 U. S. N.
- "Launching of Large Merchant Vessels."
 WM. A. FAIRBURN, Esq.
- 17. "Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea." Lieut. L. H. CHANDLER, U. S. N.

VOLUME XII.

362 Pages. 115 Plates and Drawings.

PAPERS.

- "Simple Methods in Warship Designs a Necessity."
 GEORGE W. DICKIE, Esq.
- The Semi-Globular Naval Battery."
 Anson Phelps Stokes, Esq.
- "The Seagoing Battleship."
 Commander WILLIAM HOVGAARD, Royal Danish Navy.
- 4. "Some Recent Experiments at the United States Model Basin."

 Naval Constructor D. W. TAYLOR, U. S. N.,
- "Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea."
 Lieutenant L. H. CHANDLER, U. S. N.
- The U. S. Armored Cruiser 'Colorado.'"
 Asst. Naval Constructor J. W. Powell, U. S. N.,
- "Coaling Warships at Sea—Recent Developments."
 SPENCER MILLER, Esq.

- "Time Allowance for Steam Yacht Races." Rear-Admiral George W. Melville, Ex- Engineer-in-Chief, U. S. Navy.
- "On the Rules of Lloyd's Register for Building Yachts to Class." GEORGE STANBURY, Esq.
- 10. "The Position of the Center of Lateral Resistance."

 Mons, L. E. Bertin.
- "Subdivision of Weights in Ships' Displacement."
 Colonel Nabor Solani.
- 12. "The Shipping and Shipbuilding of Puget Sound." FRANK W. HIBBS, Esq.
- "Maintenance of Machinery in Merchant Ships."
 ROBERT HAIG, Esq.
- "Uniform Specifications."
 W. D. Forbes, Esq.
- 15. "High Speed Gasoline Launches."
 CLINTON H. CRANE, Esq.
- "Speed and Power of Recent Motor Boats." ALPHEUS A. PACKARD, Esq.

 "Recent Launching Practice of the Atlantic Coast."

Asst. Naval Constructor R. H. M. Robinson, U. S. N.

 "Recent Launching Practice of the Pacific Coast."

EVERETT P. LESLEY, Esq.

VOLUME XIII.

Pages. Plates and Drawings.

PAPERS.

- "Some Problems in Ferry Boat Propulsion." COLONEL EDWIN A. STEVENS, Vice-President.
- 2. "Experiments With Ventilating Fans and Pipes."

Naval Constructor D. W. TAYLOR, U. S. N., Member of Council.

3. "Investigations Relating to the Action of Screw Propellers."

Professor Wm. F. DURAND, Member of Council.

- "Some Results of Tests of Model Propellers."
 A. V. Curtis, and L. F. Hewins, Juniors.
- 5. "The Cruiser."

Commander WM. HOVGAARD, Royal Danish Navy, Member.

- "A Comparison of Recent Battleships."
 Naval Constructor H. G. GILLMOR, U. S. N., Member.
- "THE ULTIMA," a Globular Naval Battery."
 Anson Phelps Stokes, Associate.
- 8. "A Tale from Japan."

 George W. Dickie, Member of Council.
- "Longitudinal Bending Moments of Certain Lake Steamers."
 W. I. Babcock, Member of Council.
- "Some Notes on Steam Boiler Troubles." HORACE SEE, Member of Council.
- "Notes on the Strength of Water-tight Bulkheads for Battleships and Cruisers."
 HAROLD F. NORTON, Associate.
- 12. "Marine Turbine Propulsion." CHARLES G. CURTIS, Member.
- "Marine Steam Turbine Developments."
 E. M. SPEAKMAN, Associate.
- "Methods of Conducting Speed Trials."
 Naval Constructor J. J. Woodward, U. S. N., Member.
- "How a Ninety-footer Behaves in an Ocean Race."
 PAUL EVE STEVENSON, Associate.

- 16. "Problems in Connection with High Speed Launches." CLINTON H. CRANE, Associate.
- 17. "Progressive Speed Trials of the Gasoline Launch 'LUDO.'"
 GEORGE CROUSE COOK, Member.
- 18. "Scantling Regulations in Yachting." W. P. STEPHENS, Associate.

Authors' Names and Papers.

ALDRICH, WM. S. "Engineering Research in the Navy." Vol. 3.

BABBITT, E. B.

"Recent Experiments in Attacking Armor with High Explosive Shells." Vol. 9.

BABCOCK, W. I.

"Portable Pneumatic Riveters in Shipbuilding."
Vol. 6.

"System of Work in a Great Lake Shipyard."
Vol. 7.

"Notes on the Sheathing." Vol. 7.

"Longitudinal Bending Moments of Certain Lake Steamers." Vol. 13.

BANKSON, LLOYD.

"Safety of Torpedo Boats at Sea and in Action Under Various Conditions." Vol. 8.

BATES, WM, W.

"Comparative Performance of American and Foreign Freighting Ships-Our Superiority." Vol. 1.

BAUER, M. H.

"Graphic Calculations of a Ship's Stability."
Vol. 11.

BAXTER. WILLIAM J.

"Notes on Launching." Vol. 2.
"Navy Yard Expenses." Vol. 5.

BELKNAP, F. W.

"Measurement Rules for Yachts, with Special Reference to Racing Conditions." Vol. 10.

BERTIN, L. E.

"The Use of Small Models for the Determination tion of Curves of Stability." Vol. 2.

"The Position of the Center of Lateral Resistance."

Vol. 12.

BLACKWELL, F. O.

"The Possible and Probable Future Development in the Use of Electricity on Board Ships." Vol. 10.

Bowles, Francis T.

"Remarks on the New Designs for Naval Vessels."
Vol. 10.

BOYD, JAMES T.

"United States Treasury Rules for the Inspection of Machinery and Boilers." Vol. 1.

Cassidy, Arthur B.

"The Standard Navy Boats." Vol. 6.

CHANDLER, L. H.

"Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea." Vol. 11.

"Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea." Vol. 12.

CHACE, M. S.

"Notes on the Launching of the Cruiser 'Chattanooga'." Vol. 11.

CHENEAU, E.

"Cellulose and Its Application to Warships." Vol. 2.

COLBY, ALBERT LADD

"Non-corrosive Nickel Steel Boiler Tubes." Vol. 11.

COOK, GEORGE C.

"Longitudinal Bending Stress on Damaged Ships."
Vol. 10.

"Curves of Form of the Initial Condition." Vol. 11.
"Progressive Speed Trials of the Gesonine Launch
'LUDO'." Vol. 13.

COWLES, WM. BARNUM

"Water-Tight Bulkhead Doors — the 'Long Arm' System on the U. S. S. 'Chicago'." Vol. 5.

Cox, D. H.

"Gasoline Engines for Marine Propulsion." Vol. 11.

CRAMP, CHAS. H.

"Evolution of the Atlantic Greyhound." Vol. 1.
"The Performance of the Imperial Russian Cruiser 'Variag'." Vol. 8.

CRAMP, HENRY W.

"Corn-Pith Cellulose." Vol. 4.

CRANE, CLINTON H.

"Some Thoughts on the Design of Modern Steam "Yachts." Vol. 11.

"High Speed Gasoline Launches." Vol. 12.

"Problems in Connection with High Speed Launches." Vol. 13.

CURTIS, CHARLES G.

"Marine Turbine Propulsion." Vol. 13.

CURTIS, A. V., AND HEWINS, L. F.

"Some Results of Tests of Model Propellers." Vol. 13.

DAVENPORT, RUSSELL W.

"Production in the United States of Heavy Steel Engine, Gun and Armor Forgings." Vol. 1.

DAVIS. L. D.

"Accessibility and Circulation of Water - Tube Boilers." Vol. 2.

DENTON, JAMES E.

"Performance of the Twin-Screw Steamer 'City of Lowell'." Vol. 3.

DICKIE, JAMES.

"Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard." Vol. 7.

"Launch of a Cruiser and a Battleship." Vol. 8.

DICKIE, GEO. W.

"Some Obstacles to Shipbuilding and Owning in this Country." Vol. 2.

"Torpedo Boat Destroyers for Sea Service, with Special Reference to the Conditions that Prevail on the Pacific Coast." Vol. 6.

"The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted." Vol. 7.

"Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the Production of the Largest Class of Ocean Passenger and Freight Steamshipss?" Vol. 8.

"Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States." Vol. 10. "Simple Methods in Warship Designs a Necessity." Vol. 12.

"A Tale from Japan." Vol. 13.

Dowst. F. B.

"The Ventilation of Ships." Vol. 3.

DuBosque, F. L.

"Speed Trials of a Screw-Propelled Ferry-Boat."
Vol. 4.

DURAND, W. F., AND McDERMOTT, GEO. R.

"An Approximate Formula for the Wetted Surface of Ships." Vol. 2.

DURAND, W. F.

"The Law of Frictional Resistance." Vol. 1.

"The Number of Longitudinal Intervals in Ship Competition, as Affecting the Accuracy of Integration for Displacement," and "Note on the Relation between Reduced and True Wetted Surface." Vol. 3.

"An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers."

Preliminary Paper. Vol. 5.

"On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over." Vol. 7.

"Investigations Relating to the Action of Screw Propellers." Vol. 13.

FAIRBURN, WM. A.

"The Water-tube Boiler in the American Mercantile Marine." Vol. 10.

"Launching of Large Merchant Vessels." Vol. 11.

FORBES. W. D.

"Interchangeability of Units for Marine Work." Vol. 8.

"Uniform Specifications." Vol. 12.

FREAR, HUGO P.

"Use of Water Ballast for Colliers in the Pacific Coast Trade." Vol. 5.

GARDNER, WM.

"Steam Yachts as Naval Auxiliaries in Time of War." Vol. 1.

GILLMOR, H. G.

"Torpedo Boat Design." Vol. 5.

"Notes on Recent Improvements in Foreign Shipbuilding Plants." Vol. 8.

"A Brief Comparison of Recent Battleship Designs." Vol. o.

"A Comparison of Recent Battleships." Vol. 13.

GREENE, S. DANA.

"Electricity on Shipboard—Its Present Position and Future Development." Vol. 2.

GROESBECK. WM. G.

"Side Launch of Torpedo Boats and Torpedo Boat Destroyers." Vol. 9. "Notes on Side Launchings." Vol. 11.

HAIG, ROBERT

"Maintenance of Machinery in Merchant Ships."
Vol. 12.

HAMMER, HUGO

"A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability." Vol. 4.

HANSCOM, CHARLES R.

"Description of the Design and Building of the 21,000-ton Steamships 'Minnesota' and "Dakota'."
Vol. 11.

HIBBS, FRANK W.

"The Shipping and Shipbuilding of Puget Sound."
Vol. 12.

HICHBORN, PHILIP

"Experience Gained with our New Steel Ships as Regards Care and Preservation," Vol. 2.

"Recent Designs for Vessels for the U. S. Navy."
Vol. 3.

"The New Battleships." Vol. 4.

"Some Notes on the Speed Trials and Experience in Commission of our New Battleships." Vol. 5. "Designs of the New Vessels for the U. S. Navy." Vol. 6.

"Designs for the 'Denver' Class Sheathed Protected Cruisers." Vol. 7.

"Recent Designs of Battleships and Cruisers of the U. S. N." Vol. 8. HOVGAARD, WM.

"Watertight Subdivision of Warships." Vol. 11.

"The Seagoing Battleship." Vol. 12.

"The Cruiser." Vol. 13.

Hyslop, John

"Suggestions as to Improved Appliances for Launching Ships' Boats." Vol. 7.

KING, FRANK B.

"Hydraulic Sheers for Lifting One Hundred and Twenty-five Tons." Vol. 4.

KIRBY, FRANK E.

"Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo'." Vol. 9.

LEAVITT, FRANK M.

"Power Consumed in Propelling the Whitehead Torpedo at Various Speeds." Vol. 9.

LELAND, WALTER S.

"Displacement and Stability Calculations." Vol. 11.

LESLEY, EVERETT P.

"Recent Launching Practice of the Pacific Coast."
Vol. 12.

LINNARD, J. H.

"Naval Practice in Ship Rivets and Riveting." Vol. 4.

"The Metric System in Relation to the Shipbuilding Industry in the United States." Vol. 11.

LOVEKIN, LUTHER D.

"The Balancing of Valve Gears." Prize Competition Paper.' Vol. 10.

LUCAS, THEODORE

"Classification Rules." Vol. 8.

McDermoth & Durand, see Vol. 2, No. 15.

"Screw Propellers." Vol. 4.

"Estimated Weights of Machinery." Vol. s.

McFarland, W. M.

"Electricity in Manufacturing Plants." Vol. 11.

McGuire, J. C.

"Aluminum—Its Alloys and Their Use in Ship Construction." Vol. 3.

MEADE, RICHARD W.

"Some Suggestions of Professional Experience in Connection with the Naval Construction of the Last Ten Years—1884-1894." Vol. 2.

Meigs, J. F.

"Late Developments in Armor and Ordnance." Vol. 9.

MELVILLE, GEORGE W.

"Notes on the Machinery of the New Vessels of the United States Navy." Vol. 1.

"The U. S. Triple-Screw Cruisers 'Columbia' and 'Minneapolis'." Vol. 2.

"Causes for the Adoption of Water-Tube Boilers in the U. S. Navy." Vol. 7.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
Vol. o.

"Vibration of Steamships; with Special Reference to those of the 2d and Higher Periods." Vol. 10. "Time Allowance for Steam Yacht Races." Vol. 12.

MILLER, SPENCER

"Coaling Vessels at Sea." Vol. 7.

"Coaling o fthe U. S. S. Massachusetts at Sea." Vol. 8.

"Coaling Warships at Sea—Recent Developments."
Vol. 12.

MONTEAGLE, R. C.

"Notes on the Arrangements and Construction of Steam Pipes and their Connections." Vol. 11.

NIBLACK, ALBERT P.

"Coal Bunkers and Coaling Ship." Vol. 1.

"Tactinal Considerations Involved in War Ship Design." Vol. 3.

"Tactinal Consideration Involved in Torpedo-Boat Design." Vol. 7.

"The Tactics of the Gun." Vol. 10.

Nixon, Lewis

"Yachts in England and America." Vol. 2.

"Steel Canal Boats." Vol. 4.

"Regulations for Loading Vessels." Vol. 5.

NORTON, H. F.

"Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results." Vol. 7.

"Notes on the Strength of Water-tight Bulkheads for Battleships and Cruisers." Vol. 13.

O'NEIL, CHARLES

"The Development of Modern Ordnance and Armor in the United States." Vol. 10.

O'Neil, James

"The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels." Vol. 1.

PACKARD, ALPHEUS A.

"Speed and Power of Recent Motor Boats." Vol. 12.

PANKHURST, JNO. F.

"The Development of Shipbuilding on the Great Lakes." Vol. 1.

PARSONS, H. DEB.

"American Fire-Boats." Vol. 4.

MILLER, E. F.

"A Dynamic Steam Engine Indicator Tester."
Vol. 2.

PEADODY, C. H.

"Progressive Trials of the 'Guardian'." Vol. 5.

"Stability of a Battleship under Damaged Conditions." Vol. 6.

"Progressive Speed Trials of the U. S. S. Manning." Vol. 7.

"Some Problems on the Surfaces of Buoyancy and of Waterlines." Vol. 10.

POST. WALTER A.

"An Electrically Operated 150-ton Revolving Derrick." Vol. 6.

POWELL, J. W.

"The Preliminary Official Trial of the U. S. B. S. 'Maine'." Vol. 10.

"The U. S. Armored Cruiser 'Colorado'." Vol. 12.

PRITCHETT, HENRY S.

"Technical Training for Shipbuilders." Vol. 10.

ROBINSON, R. H. M.

"Recent Launching Practice of the Atlantic Coast."

RUHM, T. F.

"Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battleships." Vol. 4.

SABIN, A. H.

"The Composition and Classification of Paints and Varnishes." Vol. 8.

SADLER, H. C.

"Effect of Variation of Dimensions on the Stresses in a Ship's Structure." Vol. 9.

SAMPSON, W. T.

"Present Status of Face-Hardened Armor." Vol. 2.
"Test of an Experimental Turret of the U. S.
Battleship "Massachusetts'." Vol. 4.



SEE. HORACE

"Some Notes on Steam Boiler Troubles." Vol. 13.

SMITH, H. G.

"Methods of Securing Water-Tight Work." Vol. 6.

Snow, Elliot

"Rudder Experiments-U. S. S. 'Monterey'." Vol. 3.

SOLIANI, NABOR

"Subdivision of Weights in Ships' Displacement."
Vol. 12.

SPEAKMAN, E. M.

"Marine Steam Turbine Developments." Vol. 13.

SPEAR, LAWRENCE

"Bilge Keels and Rolling Experiments-U. S. S. 'Oregon'." Vol. 6.

"Submarine Torpedo Boats; Past, Present and Future." Vol. 10.

SPILLER, H. A.

"Pneumatic Steering Gear—as Applied to the U. S. Monitor 'Terror'." Vol. 5.

STAHL, ALBERT W.

"Hydraulic Power for Warships." Vol. 2.

"An Experimental Test of the Armored Side of the U. S. S. 'Iowa':" Vol. —.

STANBURY, GEORGE

"On the Rules of Lloyd's Register for Building Yachts to Class." Vol. 12.

STEPHENS. WM. P.

"The Centreboard—Its Influence on Design; Its Value and Proper Use." Vol. 3.

"The Steam Yacht as a Naval Auxiliary." Vol. 6. "Scantling Regulation in Yachting." Vol. 13.

STEVENS, E. A., AND PAULDING, CHARLES P.

'Some Notes on Tidal Corrections." Vol. 9.

"Progressive Trials of the Screw Ferry Boat 'Edgewater'." Vol. 10.

STEVENS, EDWIN A.

"Some Thoughts on the Design of New York Ferry Boats." Vol. 1.

"Progressive Trial of Ferry Boat 'Bremen'."
Vol. 11.

"Some Problems in Ferry Boat Propulsion." Vol. 13.

STEVENSON, PAUL EVE

"How a Ninety-footer Behaves in an Ocean Race." Vol. 13.

STOKES, ANSON PHELPS

"The Semi-Globular Naval Battery." Vol. 12.
"'The Ultima', a Globular Naval Battery." Vol. 13.

SWAN, JAMES
"Stability of a Ship in Damaged Condition."
Vol. 4.

TAFT, HARRISON S.

"A Comparison of the Contract Prices of our Naval Vessels." Vol. 8.

TAYLOR, DAVID W.

"The Wetted Surface of Ships." Vol. 1.

"Methods and Forms for Certain Ship Calculations." Vol. 3.

"The United States Experimental Model Basin."
Vol. 8.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.) Vol. 9.

"Ship's Forms Derived by Formulæ." Vol. 11.
"Some Recent Experiments at the United States

"Some Recent Experiments at the United States
Model Basin." Vol. 12.

"Experiments With Ventilating Fans and Pipes."
Vol. 13.

TAYLOR. HENRY C.

"American Maritime Development." Vol. 3.

WATT, R. M.

"Novelties in Ship Fittings." Vol. 7.

WETHERBEE, CHARLES P.

"Changes in Torpedo Boat Designs." Vol. 9.

WHEELER, C. E.

"The Commerce of the Great Lakes." Vol. 5.

WHEELER, F. M.

"Steam Economy Test of a Unique Form of Feed Pump." Vol. 6.

WILSON, THEODORE D.

"Steel Ships of the United States Navy." Vol. 1.

WOODWARD, JOSEPH J.

"Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements," Vol. 1.

"Recent Light-Draught Gunboats of the U. S.

Navy." Vol. 2.

"Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms." Vol. 6.

"The Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 7.

"Tests of the Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 8.

"Methods of Conducting Speed Trials." Vol. 13.

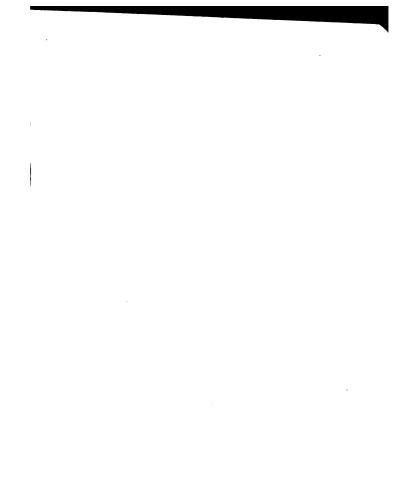
Each Volume also Contains:

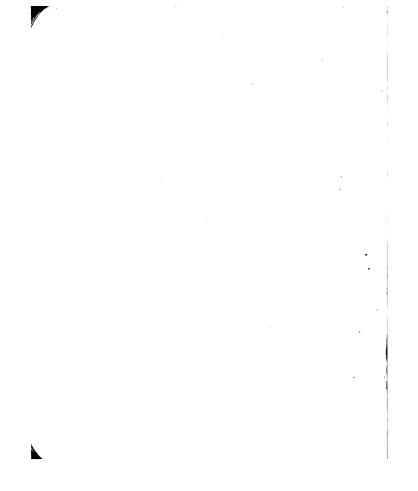
List of Officers.
List of Members and Associates.
Articles of Incorporation.
Constitution and By-Laws.
Proceedings of Annual Meeting.
President's Address.
Report of Secretary and Treasurer.
Discussions on each Paner by the Leading
Naval Architects and Engineers of the Country.

Cloth Binding. Size of Page, Quarto.

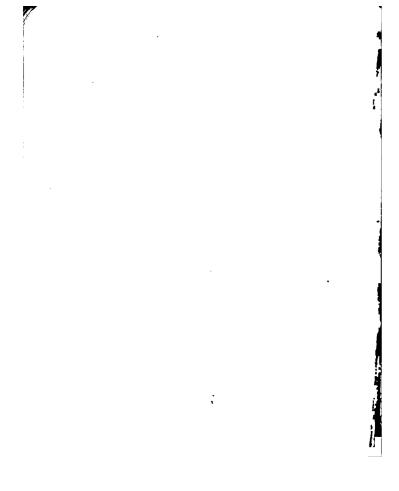


MEMORANDUM.













Marine Engineers



Society of

Naval Architects

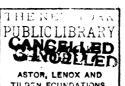
AND

Marine Engineers

THE ENGINEERING BUILDING
29 West Thirty-Ninth Street
NEW YORK

JANUARY 1, 1907

ROEHR PUBLISHING COMPANY, 35 Myrtle Ave., Brooklyn.



ASTOR, LENOX AND TILDEN FOUNDATIONS. 1907

INDEX

Officers, List of	3
Membership-	
Honorary Members	4
" Associates	4
Life Members	4
" Associates	4
Members	5
Associates	37
Juniors	55
Constitution and By-Laws	67
TABLE OF CONTENTS, VOLUMES I. TO XIV	85
Authors' Names and Papers	110

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS

LIST OF OFFICERS

President

FRANCIS T. BOWLES, Esq.

Past President and Honorary Associate Member CLEMENT A. GRISCOM. Eso.

Vice-Presidents

WASHINGTON, L. CAPPS, U.S.N. CHARLES H. LORING, U. S. N. CHARLES H. CRAMP, ESQ. CHARLES W. RAE, U. S. N. GEO. W. MELVILLE, U. S. N. FRANK L. FERNALD, U. S. N. GEORGE W. QUINTARD, ESQ. FRANK E. KIREY, ESQ. EDWIN A STEVENSON TAYLOR, U.S. N. DAVID W. TAYLOR, U.S. N.

Members and Associate Members of Council

W. IRVING BABCOCK, ESQ.
WILLIAM J. BAXTER, U.S.N.
W. H. BROWNSON, U.S. N.
JAMES E. DENTON, ESQ.
GEORGE W. DICKIE, ESQ.
WILLIAM F. DURAND, ESQ.
ANDREW FLETCHER, ESQ.
W. D. FORBES, ESQ.
HARVEY D. GOULDER, ESQ.
NAT. G. HERRESHOFF, ESQ.
IRA N. HOLLIS ESQ.
JOHN S. HYDE, ESQ.

W. H. JAQUES, ESQ.
FRANK B. KING, ESQ.
JOSEPH H. LINNARD, U.S.N.
W. M. M. McFARLAND, ESQ.
JACOB W. MILLER, ESQ.
ALBERT P. NIBLACK, U.S.N.
LEWIS NIXON, ESQ.
CECIL H. PEABODY, ESQ.
WALTER A. POST, ESQ.
HARRINGTON PUTNAM, ESQ.
HORACE SEE, ESQ.
GEORGE E. WEED, ESQ.

Executive Committee

Francis T. Bowles, ex-officio.

Washington L. Capps, U.S.N. Lewis Nixon, Esq.
Harrington Putnam, Esq. Edwin A. Stevens, Esq.
Stevenson Taylor, Esq.
William J. Baxter. U. S. N., ex-officio.

Secretary-Treasurer WILLIAM J. BAXTER.

LIST OF MEMBERS

HONORARY MEMBERS

HASWELL, CHARLES H., 325 West 78th St., New York.
WHITE, SIR WILLIAM, K. C. B., Etc., Late Chief Constructor, British Navy, Cedarcroft, Putney Heath, S. W., London, England.

HONORARY ASSOCIATES

Brassey, Rt. Hon. Lord, K. C. B., Etc., 4 Great George St., Westminster, S. W. Griscolm, Clement A., 305 Walnut St., Philadelphia, Pa.

LIFE MEMBERS

CRAMP, CHARLES H., The Wm. Cramp & Sons, Ship and Engine Building Co., Philadelphia, Pa.
FRICK, HENRY C., Capitalist, Frick Bldg., Pittsburg, Pa.
JAQUES, WM. H., Little Boar's Head, N. H.
MANTON, FRANK S., President, American Ship Windlass
Co., Providence, R. I.
QUINTARD, GEORGE W., Quintard Iron Works, foot East
12th St., New York.

LIFE ASSOCIATE MEMBERS

DINKEY, ALVA C., President, Carnegie Steel Co., Pittsburg, Pa.

PUTNAM, HARRINGTON, 27 William St., New York

QUAYLE, GEORGE L., Retired Ship Builder and Ship

Owner, 3080 Euclid Ave., Cleveland, Ohio.

STEVENS, EDWIN A., 68 Broad St., New York.

VANDERBILT, CORNELIUS, 30 Pine St., New York.

MEMBERS

A

Adams, Lawrence Stowell, Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.

Addicks, Walter R., Vice-President, Consolidated Gas Company, 4 Irving Place, New York.

ALEXANDER, EDWIN S., Inspector, Newport News S. B. & D. D. Company, Newport News, Va.

ALI, M., Lieutenant, Imperial Ottoman Navy, Yorkshire Fire & Life Insurance Co., Galata, Constantinople, Turkey.

Allderdice, Wm. H., Commander, U. S. N., Retired, care of Navy Dept., Washington, D. C.

ALLEN, ARTHUR P., Redlands, Cal.

ALLEN, REDFIELD H., Chief Draughtsman, Fore River S. B. Company, Quincy, Mass.

ALLWORK, ROLAND, Inspecting Engineer, Panama R. R. & S. S. Line, 24 State St., New York.

ALMY, DARWIN, President, Almy Water-tube Boiler Company, 178-184 Allen Ave., Providence, R. L.

Anderson, Martin A., Commander, U. S. N., Retired, 834 Prospect Place, Madison, Wis.

Andrews, Jr., Thomas, Asst. Manager and Naval Architect, Harlan & Wolff, 31 Wellington Place, Belfast, Ireland.

ANGSTROM, ARENDT, General Manager, Canadian Shipbuilding Company, Ltd., Toronto, Ontario, Canada.

Arsenius, J. A. F., Torpedo Engineer, Royal Swedish Navy, Royal Dockyard, Stockholm, Sweden.

ARTIS, THOMAS E., Chief Draughtsman, Bath Iron Works, Bash, Maine.

ATLEE, JOSHUA W., Naval Constructor, The Wm. Cramp & Sons' S. & E. B. Company, Philadelphia, Pa. House—Riverton, Burlington Co., N. J.

- ATHOUGUIA, ANTONIO JERVIS, D', Royal Naval Engineer, Portuguese Navy, 13 Rua da Paz, Lisbon, Portugal.
- Aubin, L. C. E. M., Engineer of Naval Construction, Navy Department, Paris, France.
- AYER, ARTHUR WHITTIER, General Superintendent, Harrison Brothers & Company, 3403 Gray's Ferry Road, Philadelphia. Pa.
- AYERS, SAMUEL L. P., Chief Engineer, U. S. N., Retired, 1420 Master St., Philadelphia, Pa.

\mathbf{B}

- BABCOCK, W. IRVING, Engineer and Naval Architect, Maritime Building, Battery Park, New York.
- BACON, H. D., President and General Manager, Bath Marine Construction Co., Bath, Me.
- BAILEY, CHARLES F., Chief Engineer, Newport News S. B. & D. D. Company, Newport News, Va.
- Bailey, Theodorus S., Asst. Chief Engineer, Electric Boat Co., Quincy, Mass.
- BAKER, FREDERIC W., Constructor, Lake Torpedo Boat Co., Bridgeport, Conn.
- Bancroft, J. Sellers, General Manager, Lanston Monotype Machine Co., 1231 Callowhill St., Philadelphia, Pa.
- Bankson, Lloyd, Naval Constructor, U. S. N., Navy Yard, League Island, Pa.
- BARRETT, GEORGE E., Leading Draughtsman, Engineering Department, New Lork Shipbuilding Co., Camden, N. J.
- BARRUS, GEORGE HALE, Mechanical Engineer, 12 Pemberton Square, Boston, Mass.
- BARRY, RALPH E., Hull Draughtsman, Bureau C. & R., Navy Dept., Washington, D. C.
- BARTLETT, CHARLES H., Counsellor at Law, and Consulting Engineer, Patents and Admiralty Practice, 607
 Pemberton Building, Boston, Mass.

o

- BATES, EDWARD P., Manufacturer and Contractor, 228 West Water St., Syracuse, N. Y.
- BATES, Wm. W., Naval Architect, 38 West Second Ave., Denver, Colo.
- BAUER, MAX HEINRICH, Naval Architect, Uhlenhorsterwez, 50, Hamburg, Germany.
- BAXTER, WILLIAM J., Naval Constructor, U. S. N., Navy Yard, Brooklyn, N. Y.
- BECKLEY, WILLIAM B., Morris Heights, New York.
- Belcher, ... MHERST W., Supt. Repair Shops, Cornell Steamboat Co., Rondout, N. Y.
- BELKNAP, FRANCIS W., care Cox & Stevens, 68 Broad St., New York.
- Bernier, Louis Leon, Assistant Manager, James Reilly Repair and Supply Co., New York.
 - House address-279 Carroll St., Brooklyn, N. Y.
- Berrier, Fontaine, J. B. L. F. M., Directuer du Genie Maritime de Cadre de Reserve, 16 Boulevard de Strassbourg, Toulon-sur-mer, (Var), France.
- BERRY, WARREN TAYLOR, General Superintendent, Quintard Iron Works, foot 12th St., E. R., New York.
- Bertin, L. E., Director of Naval Construction, French Navy, 8 Rue Garanciere, Paris, France.
- Besselievre, Wm. C., Jr., 57 Garfield Ave., New London, Conn.
- Beuret, John D., Naval Constructor, U. S. N., Navy Yard, Puget Sound, Wash.
- BIGELOW, FRANK LEWIS, President, The Bigelow Co., New Haven, Conn.
- BILES, J. HARVARD, Professor Naval Architecture, University Glasgow, Glasgow, Scotland.
- BINNEY, ARTHUR, Naval Architect, Mason Building, Boston, Mass.

- BLANKENSHIP, JOHN MILLINGTON, Superintendent, Merchants' and Miners' Transportation Co., 1605 St. Paul Bldg., Baltimore, Md.
- BLOM, CHRISTIAN, Commander Norwegian Navy and Sub-Director of the Navy Yard, Horton, Norway.
- Bowers, Charles C., Superintending Engineer, 151 Chilton St., Elizabeth, N. I.
- Bowers, Frederick C., Lieutenant-Commander, U. S. N., care Navy Dept., Washington, D. C. ington, D. C.
- Bowles, Francis T., Ex-Chief Constructor U. S. N., President, Fore River Shipbuilding Co., Quincy, Mass.
- Brauchli, Jacob, Inspecting Draughtsman, office of Superintending Engineer, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va.
- Bray, C. D., Prof. Mechanical Engineer, Tuft's College, Mass.
- Brewer, Charles B., Chief Draughtsman, Bureau of C. & R., Navy Dept., Washington, D. C.
- Brown, Daniel D. B., Collingwood Shipbuilding Co., Collingwood, Ont.
- BRYSON, JOHN, Draughtsman, Bureau of Construction and Repair, Navy Dept., Washington, D. C.
- Buckelew, Charles Henry, Manager, New York Office, Ashton Valve Co., 128 Liberty St., New York. House—126 West 5th St., Plainfield, N. J.
- Bull, Goold H., Professor of Marine Engineering, Webb's Academy, University Heights, New York.
- Burney, Charles C., Naval Architect, Union S. S. Co., 17 Battery Park, New York.
- Busch, Arthur L., Shipyard Superintendent, New Suffolk, L. I.

C

CANAGA, ALFRED B., Commander, U. S. N., Navy Yard, Boston, Mass.

CAPDEVIELLE, HENRY, Leading Ship Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

CAPPS, WASHINGTON L., Rear-Admiral and Chief Constructor, U. S. N., Chief of the Bureau of Construction and Repair, Navy Dept., Washington, D. C.

CARNES, WILLIAM F., Assistant Supt. Engineer in charge of Drawing Rooms, Harlan & Hollingsworth Co., 906 Franklin St., Wilmington, Del.

CARTER, GEORGE JOHN, Manager, Elswick Shipyard, Sir W. G. Armstrong, Whitworth & Co., Ltd., New Castle-on-Tyne, England.

CARTER, T. F., Lieut.-Commander, U. S. N., Navy Yard, Pensacola, Fla.

CASKEY, S. S., Supt. of Machinery, Harlan & Hollingsworth Co., Wilmington, Del.

CASSIDY, ARTHUR B., Draughtsman in charge, Office of Superintending Constructor, Fore River Shipbuilding Co., 71 Winthrop Ave., Wollaston, Mass.

CATHCART, WILLIAM LEDYARD, Gwynedd, Pa.

CHANDLER, L. H., Lieut.-Commander, U. S. N., Navy Dept., Washington, D. C.

Chare, Mason Smith, 31 Wales St., Dorchester, Mass. Clark, Carl H., Naval Architect and Engineer, 509 Chamber of Commerce, Boston, Mass.

CLARK, DEAN, Operating Manager, Smith Premier Typewriter Co., Syracuse, N. Y.

CLARK, WALTER WILLIAM, Erecting Engineer, Stirling Consolidated Boiler Co., Barberton, Ohio. House—1322 Stiles St., Philadelphia.

CLARKE, GEO., Superintendent, Kensington Shipyard Co., Beach & Palmer Sts., Philadelphia, Pa. Home address—1322 Stiles St., Philadelphia, Pa.

CLARKE, SAMUEL J., 309 West 103d St., New York.
COLLISON, WILLIAM BROWN, Draughtsman, Bureau of
C. & R., Navy Yard, Washington, D. C.

- COOK, FRED. M., Naval Architect, Union St. Court, Bath, Maine.
- COP, HUIBERT, Prof. Naval Architecture, Polytechnical School at Delft, Oost Singel 61, Delft, Holland.
- CORNBROOKS, ERNEST I., Newport News, Va.
- CORNBROOKS, THOMAS M., Naval Architect, Maryland Steel Co., 511 Franklin Terrace, Sparrow's Point, Md.
- COWLES, WM. BARNUM, Consulting Naval Architect and Mechanical Engineer, Lake and Wason Sts., Cleveland, Ohio.
- COX, DANIEL H., Naval Architect, 68 Broad St., New York.
- COX, IRVING, Naval Architect, 68 Broad St., New York. COXE, WILLIAM GRISCOM, President, Harlan & Hollingsworth Co., Wilmington, Del.
- CRAIG, JOHN F., 43 Produce Exchange, Toledo, O.
- CRAIG, JOHN, 43 Produce Exchange, Toledo, O.
- CRAIZ, JOHN F., Treasurer, Craig Shipbuilding Co., Toledo, O.
- CRAMP, EDWIN S., Supt. Engineer, Wm. Cramp & Sons' S. & E. B. Co., 1936 Spruce St., Philadelphia, Pa.
- CRAMP, WILLIAM M., 1227 N. Broad St., Philadelphia, Pa.
- CROWNINSHIELD, B. B., Naval Architect, 70 Long Wharf, Boston, Mass.
- CURR, ROBERT, Marine Surveyor, Canadian Shipbuilding Co., Bridgeburgh, Ont., Canada.
- CURTIS, CHARLES GORDON, International Curtis Marine Turbine Co., 149 Broadway, New York.
- CURWEN, HENRY ROBERT, Draughtsman, Fore River Shipbuilding Co., Quincy, Mass.

D

DAVIDSON, JAMES EDWARD, Assistant General Manager, James Davidson, Shipbuilder, 1710 Centre Ave., Bay City, Mich. DAVIDSON, MARSHALL T., 108 St. James Place, Brooklyn, N. Y.

Davis, Charles Henry, Consulting Engineer, Room 924, Board Exchange Building, 25 Broad St., New York.

DAVIS, LEONARD D., 2668 Peach St., Erie, Pa.

DEGELDER, WILLIAM HESSEL MARIUS, Manager L. Smit and Zoon, Ship and Engine Building Works, Kinderdyk, Holland.

DeLaval, Geo., Manager, Blake and Knowles Steam Pump Co., East Cambridge, Mass.

DELONG, HAROLD W., P. O. Box 1036, Bath, Me.

Deming, William Henry, Draughtsman and and Mechanical Engineer, Continental Iron Works, Brooklyn, N. Y.

Denton, James E., Professor Exp. Mechanics, Stevens Institute of Technology, Hoboken, N. J.

Des Anges, H. L., Supt. Floating Equipment, L. I. R. R., Long Island City, N. Y.

DIALOGUE, JOHN H., Shipbuilder, 515 Linden St., Camden, N. J.

DICKEY, WM. D., Vice-Pres. and Genl. Mgr., Shooter Island Shipyard Co., Marine Harbor, S. I. Room-409 Produce Exchange, New York.

DICKIE, DAVID W., 428 Mississippi St., San Francisco, Cal.

DICKIE, GEO, W., Naval Architect and Marine Engineer,
care New York Shipbuilding Co., Camden, N. J.

DICKIE, JAMES, Naval Architect and Marine Engineer, 36 Stewart St., San Francisco, Cal.

DICKINSON, RANDALL T., Consulting Engineer, Delaware River Ship and Engine Works, Chester, Pa.

DIXON, ALBERT F., Captain, U. S. N., Bureau of S. E., Navy Dept., Washington, D. C.

Dobson, WM. A., Naval Architect, Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.

- Dodd, Willis Gorman, Consulting Engineer, 17th and Capp Sts., San Francisco, Cal.
- Donald, James, Naval Architect, New York Shipbuilding Co., Camden, N. J.
- Donnelly, Wm. T., Consulting Mechanical Engineer, 780 E. 18th St., Flatbush, Brooklyn.
- DOUGHERTY, CHARLES, J., Electrical Engineer, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
- DuBois, A. J., C. E., M. E., Prof. of Engineering, Sheffield Scientific School, Yale College, New Haven, Conn.
- DuBosque, F. L., Assistant Engineer, Floating Equipment P. R. R., Jersey City, N. J.
- DUKE, JAMES OLIVER, Asst. Superintendent, Kensington Shipyard Co., Philadelphia, Pa.
- DUKE, JAMES OLIVER, Asst. Superintendent, Kensington Shipyard Company, Philadelphia, Pa.
- DURAND, WILLIAM F., Professor, Mechanical Engineering, Stanford University, California.

Ю

- EBSEN, HENRY L., W. & A. Fletcher Co. House, 927 Bloomfield St., Hoboken, N. J.
- ECKART, WILLIAM R., Consulting Engineer, 3014 Clay St., Sot Francisco, Cal.
- EDSON, JARVIS B., 313 West 74th St., New York.
- EDWARDS, CHARLES B., Fore River Shipbuilding Co., Quincy, Mass.
- EIMERT, GEORGE H., Assistant Chief Draftsman, Engine Department, New York Shipbuilding Company, Camden, N. J.
- ELDRIDGE, FRANK H., Commander, U. S. N., Naval Examining Board, Mills Building, Washington, D. C. ELLIOTT, WILLIAM E., Chief Engineer, Goodrich Trans-

portation Company, Chicago, Ill.

ELWELL, HOWARD P., 78 Putnam St., Quincy, Mass.

ENGARD, ALBERT C., Chief Engineer, U. S. N. (retired), 2131 North 19th St., Philadelphia, Pa.

EPES, HENRY S., Assistant Naval Architect, Electric Boat Co., Quincy, Mass.

EVANS, HOLDEN A., Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.

EVERETT HAROLD ARTHUR, Instructor in Naval Architecture, Massachusetts Institute of Technology, Boston, Mass.

EWERTZ, ERIC HAROLD, Supt. of Construction of Subm. Electric Boat Co., Quincy, Mass.; 63 Brook St., Wollaston, Mass.

F

FAIRBURN, WILLIAM A., Suptg. Engineer, Southern Pacific Company, Pier 34, N. R., New York.

FARGUSSON, MARK, Naval Architect and Engineer, Room 801, 11 Broadway, New York.

FELTON, HERBERT C., Superintendent, Delaware River Ferries, Camden, N. J.

FERGUSON, GEORGE R., Assistant Engineer, Department of Bridges, 1226 Park Row Building, New York.

Ferguson, Homer L., Superintendent of Hull Construction, Newport News S. B. & D. D. Co., Newport News, Va.

FERNALD, FRANK L., Naval Constructor, U. S. N. (retired), Eliot, Me.

FERRAND, C., Engineer-in-Chief de la Marine Française, 48 Rue de Grenelle, Paris, Françe.

FLETCHER, ANDREW, JR., North River Iron Works, Hoboken, N. J.

FLETCHER, WM. H., North River Iron Works, Hoboken, N. J.

*2

- FLOOD, H. C., General Manager, Bergen Mekanikse Vaerksted, Bergen, Norway.
- FOLEY, W. C. LEB., Assistant Superintendent Hull Construction, Newport News S. B. & D. D. Co., Newport News, Va.
- FORBES, W. D., President, W. D., Forbes Co., 1300 Hudson St., Hoboken, N. J.
- FORD, DANIEL EDWARD, Superintendent of Construction and Repairs, Standard Oil Co., 26 Broadway, New York.
- FORSYTH, ROBERT, 1697 Vallejo St., San Francisco, Cal. FRASER, ROBERT H., Consulting Engineer and Marine Surveyor, Chamber of Commerce Building, Boston, Mass.
- FREAR, Hugo P., Naval Architect, Union Iron Works, San Francisco, Cal.
- FRICK, HENRY EDGEWORTH, Fore River Shipbuilding Co., Quincy, Mass.
- FRIES, AXEL H., General Manager, The Surte-Liljedahl Glass Works, Surte (near Gothenburg), Sweden.

G

- GARDNER, JOHN HOWLAND, Superintendent, Marine Construction, N. Y., N. H. & H. R. R., Newport, R. I.
- GARDNER, WM., Architect, I Broadway, New York.
 GASKIN, EDWARD F. W., Manager, Union Dry Dock Co.,
 516 Norwood Ave., Buffalo, N. Y.
- GATEWOOD WILLIAM, Chief Draughtsman, Hull Department, Newport News S. B. & D. D. Co., Newport News, Va.
- GILLMOR, HORATIO G., Naval Constructor, U. S. N., Superintending Constructor, Bath Iron Works, Bath, Me.
- GODBOLD, CHARLES H., JR., Draughtsman, Union Iron Works, San Francisco, Cal.

GOLDEN, MICHAEL J., Professor Dynamic Engineering, Purdue University, Lafayette, Ind.

Gray, Thomas, Director of Department Mechanical and Electrical Engineering, Rose Polytechnic Institute. House, 802 Chestnut St., Terre Haute, Ind.

GROESBECK, WM. G., Naval Constructor, U. S. N., New York Shipbuilding Co., Camden, N. J.

GROGAN, FRANK WILLIS, Woodbury, N. J.

GUNNELL, ELIAS, President, Manitowoc Dry Dock Co., Manitowoc, Wis.

H

HAIG, ROBERT, Surveyor, Lloyd's Register of Shipping, 324 Bourse, Philadelphia, Pa.

HAIGHT, ROBERT STANLEY, Amityville, L. I.

Hall, Robert Everett, Secretary, New York Steam Fitting Co., 147 Lafayette St., New York, N. Y.

HALL, R. T., Commander, U. S. N., Navy Yard, New York.

HALL, THOMAS S., Superintending Engineer, New York and Texas S. S. Co., 129 Front St., New York, N. Y.

HAMMAR, Hugo, Superintendent, Goteborg, Nya Verkstada A. B., Goteborg, Sweden.

HAMPTON, JAMES R., Clydebank Shipbuilding Co., Clydebank, Scotland.

HAND, HARRY W., General Manager, The Wm. Cramp & Sons' S. & E. B. Company, Philadelphia, Pa.

HANSCOM, CHARLES R., President, Eastern Shipbuilding Co., New London, Conn.

HANSCOM, JOHN F., Naval Constructor, U. S. N. (retired), Senior Member of Board on Changes, Room 11, Fourth Floor, P. O. Bldg., Philadelphia, Pa.

HARGAN, JAMES A., Chief Draughtsman, C. & R. Dept., Navy Yard, New York. House, 1516 47th St., Brooklyn, N. Y.

- HART, GEORGES, Chief Engineer, French-English Postal Service, 99 Rue La Fayette, Paris.
- HARTT, WM. H., Chief Draughtsman, C. & R. Dept., Navy Yard, Norfolk. Va.
- HARVEY, URBAN, First Assistant Engineer, Revenue Cutter Service, Division Revenue Cutter Service, Treasury Department, Washington, D. C.
- HAUG, JOHN, Superintendent Marine Transportation, Standard Oil Co., 2313 Durant Ave., Berkeley, Cal.
- HAWES, R. J., 42 East 21st St., New York.
 HAYWARD, H. S., Superintendent Motive Power, Penn-
- sylvania R. R., Jersey City, N. J.
- HAY, MARLEY F., Post Office Box No. 16, Vlissingen, Holland.
- HECTOR, DETLOF A., Draughtsman, Fore River Shipbuilding Co., Quincy, Mass.
- HENDERSON, RICHARD, Captain, U. S. N., Salisbury, N. C. HENDERSON, J. C., General Manager, Whitestone Forge and Construction Co., 11 Broauway, or 239 W. 103d St., New York.
- HERBERT. FREDERICK DAVIS, 71 Broadway, New York.
- HERRESHOFF, JOHN B., President, Herreshoff Mfg. Co., Bristol, R. I.
- HERRESHOFF, NATHANIEL G., Vice-President and Manager, Herreshoff Mfg. Co., Bristol, R. I.
- Herrick, John J., Mechanical Engineer, Department Docks and Ferries, 27 Madison Ave., Tompkinsville, S. I.
- HESS, HENRY, Managing Director and Chief Engineer, Deutsche Nieles-Werk Zeugmaschinen-Fabrik, Ober-Schone-weide, near Berlin, Germany.
- HIBBS, FRANK W., Superintending Engineer, Moran Bros. Co., Seattle, Wash.
- HIGGINS, HOWARD C., Superintending Engineer, Old Dominion S. S. Co., 81 Beach St., New York.

HILL, EDWARD BUFFUM, Fore River Shipbuilding Co., Quincy, Mass.

HILL, WARREN E., Vice-President, Continental Iron Works, Station G, Brooklyn, N. Y.

HILLMANN, GUSTAV, Naval Architect, 470 Greene Ave., Brooklyn, N. Y.

Hobson, R. P., Greensboro, Ala.

Hollis, Ira N., Professor Mechanical Engineering, Harvard University, Cambridge, Mass.

HOOVER, JOHN B., Naval Constructor, U. S. N. (retired), 22 Stiles St., Elizabeth, N. J.

HOOVER, JOHN B., JR., Leading Draughtsman, Navy Yard, Norfolk, Va.

HOPKINS, ALBERT LLOYD, Assistant General Manager, Newport News S. B. & D. D. Co., 2904 West Ave., Newport News, Va.

HOPKINS, EDWARD, Naval Architect, Toledo Shipbuilding Co., Toledo, O.

HOUGH, EDWARD STAMFORD SAMUEL, Engineer Surveyor, Bureau Veritas, Foot of Folsom St., San Francisco, Cal.

HOUGHTON, WILLIAM, Chief Draughtsman, Office of Superintending Constructor, Bath Iron Works, Bath, Maine.

HOVGAARD, W., Professor of Naval Design, Massachusetts Institute of Technology, Boston, Mass. House, 17 Winthrop St., West Newton, Mass.

HOWARD, OLIVER ZELL, Marine Engine and Roiler Draughtsman, and Instructor in Mechanical Drawing, in the Department of Marine Engineering and Naval Construction, N. S. Naval Academy, Annapolis, Md.

Howell, William Neill, Chief Engineer, Simon Lake, Universitaets-Str. 3B, Berlin, Germany. HOXIE, WILLIAM D., Marine Department, Babcock & Wilcox Co., 85 Liberty St., New York.

HOYT, FREDERICK M., President, Greenport Basin and Construction Co., Greenport, N. Y.

Office, 45 Broadway, New York.

HUNTER, GEORGE BURTON, Chairman and Director, C. S. Swan & Hunter Co., Ltd., Wallsend-on-Tyne, England.

HYDE, CHARLES E., President and General Manager, The New London Marine Iron Works, New London, Conn.

HYDE, EDWARD W., Bath Iron Works, Bath, Me.

HYND, ALEXANDER, Consulting Engineer, 208 Western Reserve Bldg., Cleveland, O.

J

Jacobus, David S., Professor of Experimental Engineering, Stevens Institute, Hoboken, N. J.

Jansson, Constantin, Naval Architect and Marine Engineer, Unions gtu 41, Helsingfors, Finland.

JEFFREY, FRANK, General Superintendent, Detroit Shipbuilding Co., Detroit, Mich.

JOHNSTON, ARCHIBALD, President, Bethlehem Steel Co., 120 Church St., Bethlehem, Pa.

Jones, Charles M., Consulting Engineer and Naval Architect, 1514 North Sixth St., Philadelphia, Pa. Jonson, Julius, 51 East 96th St., New York.

JORDAN, S. S., Naval Architect and Engineer, Engineers' Club, 374 Fifth Ave., New York.

X

KAEMMERLING, GUSTAV, Lieutenant-Commander, U. S. N., Room 518, No. 6 Beacon St., Boston, Mass.

KATZENSTEIN, LEOPOLD, Mechanical Engineer, 358 West St., New York.

KEARNY, GEORGE H., Captain, U. S. N., Navy Dept., Washington, D. C.

Keough, William T., Consulting Engineer and Naval Architect, 508 Board of Trade Building, 131 State St., Boston, Mass.

KILLILEA, JAMES J., Superintendent of Construction, U. S. Light-House Establishment, 39 Howland St., Boston, Mass.

King, Frank B., Consulting Marine Engineer and Naval Architect, 1442 Rhode Island Ave., Washington, D. C.

KIRBY, FRANK E., Naval Architect, 409 Stevens Building, Grand River Ave., Detroit, Mich.

KIRBY, GILBERT L., San Francisco, Cal.

KONITZKY, H., Superintendent, Skinners Shipbuilding and Dry Dock Co., Station "E," Baltimore, Md.

L

LAING, Andrew, Director and General Manager, The Wallsend Slipway and Engineering Co., Wallsendon-Tyne, England.

LAKE, SIMON, President, Lake Torpedo Boat Co., Bridgeport, Conn.

LANZA, GAETANO, Professor, Theoretical and Applied Mechanics, Massachusetts Inst., Tech., Boston, Mass.

LASSOE, VALDEMAR F., Engineer and Naval Architect, Maritime Building, 8 Bridge St., New York.

LEAVITT, FRANK M., Mechanical Engineer, 258 Broadway, New York.

LEFLAIVE, L. J. G., Ex-Naval Constructor, French Navy, and Manager, Bietrix, Leflaive, Nicolet & Cie, Saint Etienne, France.

LELAND, WALTER S., Assistant Professor of Naval Architeciure, Massachusetts Institute of Technology, Boston. Mass.

- LEONARD, JOHN C., Lieutenant-Commander, U. S. N., Address, care of Navy Dep't, Washington
- LEPINE, F. C., Carpenter, U. S. N., "U. S. S. Denver."

 Address, care of Navy Department, Washington,
 D. C.
- LEVENTHAL, PHILIP, Designing Engineer and Chief Draughtsman, with Wm. Gardner, I Broadway, New York.
- LIGNOLA RAIMONDO, Naval Constructor, Royal Italian Navy, R. Cantiere di Castellamare di Stabia, Italy.
- LILJEGREN, CARL OSCAR, Ingenior, Goteborg, Sweden.
- LILLIEHOOK, CHARLES J. F. M., Professor Naval Architecture, Royal Technical High School, Sturegatan 29, Stockholm, Sweden.
- LINCOLN, JAMES M., 405 Lenox Ave., New York.
- LINDFORS, HENRY A., Professor Naval Architecture, Chalmers Institute Technology, Gottenburg, Sweden.
- LINNARD, JOSEPH H., Naval Constructor, U. S. N., Bureau of C. & R., Navy Department, Washington, D. C.
- LOEWENSTEIN, LOUIS C., Instructor Mechanical and Marine Engineering, Lehigh University, South Bethlehem, Pa.
- LOGAN, ROBERT, General Manager, American Shipbuilding Co., Cleveland, Ohio.
- LORING, CHARLES H., ex-Engineer-in-Chief, U. S. N. (retired), 239 Clermont Ave., Brooklyn, N. Y.
- LOVEKIN, LUTHER D., Chief Engineer, New York Shipbuilding Co., Camden, N. J.
- LOYD, JOHN, Mechanical Engineer, 558-562 Wates St., New York.
- LUKE, WILLIAM JOSEPH, Naval Architect, John Brown & Company, Ltd., Clydebank, Scotland.
- LUCAS, THEODORE, 801 St. John's Place, Brooklyn, N. Y.

LYSHOLM, HENRY, Superintendent of Hull Construction, New York Shipbuilding Co., Camden, N. J.

M

- McAllaster, Eugene L., Mechanical Engineer and Naval Architect, 502-504 Pioneer Building, Seattle, Wash.
- MCALLISTER, CHARLES ALBERT, Engineer-in-Chief, U. S. Revenue Cutter Service, Treasury Department, Washington, D. C.
- McDermott, George R., Professor, School of Marine Construction, Sibley College, Cornell University, Ithaca, N. Y.
- McElhiney, Mark P., Nautical Adviser, Marine Department, 252 Lisgar St., Ottawa, Ontario, Canada.
- McFarland, Walter M., Westinghouse Electric and Manufacturing Co., P. O. Box 011, Pittsburg, Pa.
- McGregor, Robert, Superintending Engineer, Metropolitan S. S. Co., Pier 11, N. R.
 House—Sherman Square Hotel, New York.
- McKinlay James, Chief Draughtsman of Hull Department, Union Iron Works, 707 Wisconsin St., San Francisco, Cal.
- McMakin, Joseph, Superintending Engineer, U. S. Light House Board, Washington, D. C.
- McMutrie, Laurence H., of McMutrie-Guiler Co., Consulting Engineers, 69 Wall St., New York.
- MACALPINE, JOHN H., Naval Architect and Consulting Engineer, 615 Walnut St., Philadelphia, Pa.
- MACLEAN, ALEXANDER J., Professor, Naval Architecture, Webb's Academy, University Heights, N. Y.
- MAGEE, EDWARD A., Chief Engineer, U. S. N. (retired), 187 Marcy Ave., Brooklyn, N. Y.
- MAGEE, GEO. W., Chief Engineer, U. S. N. (retired), 187 Marcy Ave., Brooklyn, N. Y.

- MAGOUN, HENRY A., Engineer, Marine Department, Maryland Steel Co., Sparrow's Point, Md.
- MAIN, ARCHIBALD MACNICOL, Chief Draughtsman, The Harlan & Hollingsworth Co., Wilmington, Del.
- MALSTER, WILLIAM T., 1811 North Charles St., Baltimore, Md.
- Mancor, James Henry, Principal Engineer Surveyor, Lloyd's Register of Shipping, 15 Whitehall St., New York.
- Manning, Charles H., Passed Assistant Engineer, U. S. N. (retired), Superintendent, Amoskeag Mfg. Co., Manchester, N. H.
- MARVEL, THOMAS S., Shipbuilder, 51 Ann St., Newburg, N. Y.
- MATTHEWS, EVERETT M., Chief Draughtsman, C. & R. Dept., Navy Yard, League Island, Pa.
- Mattice, Asa M., Works Manager, Walworth Mfg. Co., South Boston, Mass.
- MELLIN, CARL J., Consulting Engineer, American Locomotive Company, 1109 Union St., Schenectady, N.Y.
- Melville, Geo. W., Rear-Admiral, ex-Engineer-in-Chief, U. S. N. (retired), 615 Walnut St., Philadelphia, Pa.
- MICHAEL, LUCIUS M., Hull Draughtsman, N. Y. Shipbuilding Co., Camden, N. J.
- MICKLEY, ALBERT J., Mechanical Engineer, Department of Docks and Ferries, St. George Ferry Terminal, Staten Island. N. Y.
- MIDDLETON, PERCY H., Vice-President, H. I. Crandall Company, 102 Border St., East Boston, Mass.
- MILLER, SPENCER, Chief Engineer, Cableway Department, Lidgerwood Mfg. Co., 95 Liberty St., New York. House, 217 Turrell Ave., South Orange, N. J.
- MILLER, WALTER, Consulting Engineer, 524 Rockefeller Building, Cleveland, Ohio.

MILLS, EDMUND, in charge of Marine Department, The Babcock & Wilcox Co., Bayonne, N. J.

House, 319 Arlington Ave., Jersey City, N. J.

MILNE, JAMES STRACHAN, Superintendent, Neafie & Levy S. & E. B. Co., Philadelphia.

House, The Robeson, Camden, N. J.

MONTEAGLE, ROBERT CHARLES, Chief Engineer, The Atlantic Works, East Boston, Mass.

Mooney, Thomas, Engineer, koach's Shipyard, Chester, Pa.

Moore, Douglass G., 424 Westminster Ave., Elizabeth, N. J.

MOORE, MILLER F., 45 East Fourth Ave., Roselle, N. J. MOORE, STEWART H., 6639 Perry Ave., Chicago, Ill.

MORAN, ROBERT, Rosario, Isan Juan Co., Wash.

MORITZ, ALBERT, Commander, U. S. N. (retired), 153 East 73d St., New York.

Mosher, Charles D., Mechanical Engineer, 1 Broadway, New York.

MOWER, CHARLES D., Naval Architect and Yacht Broker, 29 Broadway, New York.

Muckle, M. R., Jr., Mechanical Engineer, 1722 Pine St., Philadelphia, Pa.

MULL, JAMES HENRY, General Superintendent, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.

MULLER, GEORGE, Naval Architect and Engineer, 820 23d St., N. W., Washington, D. C.

N

NEVINS, WILLIAM T., Superintendent Construction, Sherman Co., Chicago, Ill.

NEWMAN, RICHARD LANO, Naval Architeci, 20 Russell St., Victoria, B. C.

NICKUM, Wm. CARR, Draughtsman, Wm. Cramp & Sons' S. & E. B. Co., 133 Apsley St., Philadelphia, Pa.

- NILSON, LEONARD J., Yacht Builder, Ferry Bar, Baltimore, Md.
- NISH, WILLIAM, Superintending Engineer, Anchor Line, 17-19 Broadway, New York.
- NIXON, LEWIS, 26 Cortlandt St., New York.
- NOCK, F. S., Naval Architect, East Greenwich, R. I.
- NORMAN, JOHAN HUGO, Assistant Chief Draughtsman, Hull Construction Department, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
- NORTON, HAROLD P., Lieutenant-Commander, U. S. N., Bureau of S. E., Navy Dept., Washington, D. C.
- NUTTING, DANIEL CHAPLIN, Naval Constructor, U. S. N., Bureau of C. and R., Navy Department, Washington, D. C.
- NYSTEDT, THURE G., Naval Constructor, Royal Swedish Navy, Carlskrona, Sweden.

o

- OLDHAM, JOSEPH R., Naval Architect, 814 Perry-Payne Building, Cleveland, Ohio.
- O'NEIL, CHARLES, Rear-Admiral, U. S. N. (retired), Metropolitan Club, Washington, D. C.
- O'NEILL, JAMES J., Mechanical Engineer, The Fairfield Shipbuilding and Engineering Co., Ltd., Govan, Glasgow. Scotland.

\mathbf{P}

- PACKARD, ALPHEUS, APPLETON, Naval Architect and Engineer, 131 State St., Boston, Mass.
- PAGE, CHARLES BARNARD, President, Page Engineering Co., Inc., 121 E. York St., Baltimore, Md.
- Pahlow, Franklin, Conrad, Yard Superintendent, Great Lakes Engineering Works, Detroit, Mich.
- PALEN, FREDERICK POMEROY, Assistant Chief Engineer, Newport News S. B. & D. D. Co., Newport News, Va.

- PALMER, GEORGE Q., President, Quintard Iron Works, Foot of East 12th St., New York.
- PALMER, NICHOLAS F., JR., Treasurer and General Manager, Quintard Iron Works, Foot of East 12th St... New York.
- PALMER, WILLIAM FRANKLIN, Architect and Managing Owner, Palmer Fleet, Uphams Cor., P. O. No. 27 Hartford St. Dorchestes, Mass.
- Parsons, H. DeB., Consulting Engineer, 22 William St., New York.
- PATERSON, JAMES V., Vice-President and General Manager, The Moran Co., Seattle, Wash.
- PATTERSON, JOSEPH SANBORN, Consulting Engineer, 340 73d St., Brooklyn, N. Y.
- PATTERSON, HOWARD, President, New York Nautical College, 130-132 Water St., New York.
- Pauli Sven, Assistant Naval Constructor, Kockums Wharf, Malmo, Sweden.
- Peabody, Cecil H., Professor of Naval Architecture and Marine Engineering, Massachusetts Institute of Technology, Boston, Mass.
- Peacock, Edward L., Chief Constructor, Lake Torpedo Boat Co., Universitaets-Str. 3B, N. W. 7, Berlin, Germany.
- PENTON, HENRY, 210 Palmer Ave., Detroit, Mich.
- PERHAM, ERNEST A., 225 W. 33d St., New York.
- PERRY, WILLIAM A., care of H. R. Worthington Co., 114 Liberty St., New York. House, 7 East 56th St., New York.
- Pessano, Antonio C., President, Great Lakes Engineering Works, Detroit, Mich.
- PFATISCHER, MATHIAS, Chief Engineer, Electro-Dynamic Co., Philadelphia, Pa.
 House, 162 West Coulter St., Germantown, Pa.

- PITTS, THOMAS DORSEY, Civil Engineer, 45 Broadway, New York.
- PLATT, JOHN, of Thorpe, Platt & Co., 97 Cedar St.. New York.
- POMMER, EUGENE R., Mechanical Engineer, 765 Jefferson Ave., Brooklyn, N. Y.
- POPPER, SIEGFRIED, Chief Constructor, Imperial and Royal Austro-Hungarian Navy, Pola, Austria.
- Post, Walter A., General Manager, Newport News S. B. & D. D. Co., Newport News, Va.
- POWELL, JOSEPH WRIGHT, Assistant to the President, William Cramp & Sons' Ship & Engine Building Co., Philadelphia, Pa.
- POWELL, WILLIAM T., 1699 31st St., Washington, D. C. POWERS, WILBUR F., Hull Draughtsman, N. Y. Shipbuilding Co., Camden, N. J.
- PRATT, FRANCIS E., New York Representative, Almy Water Tube Boiler Co., 45 Broadway, New York.
- Pray, Thomas, Jr., Consulting Engineer, P. O. Box 2809, Boston. Mass.
- Pusey, Charles W., Claymont, Del.

R

- RAE, CHARLES W., Rear-Admiral and Engineer-in-Chief, U. S. Navy, Chief of the Bureau of Steam Engineering, Navy Department, Washington, D. C. House, 1827 Jefferson Place, Washington, D. C.
- RAYNAL, ALFRED H., Bureau of Steam Eng., Navy Yard, 1626 Riggs Place, N. W., Washington, D. C.
- Rebolledo, Miguel, Ingeniero, Calle Sur, 34, No. 5, Mexico City, Mexico.
- Redgrave, DeWitt C., Commander, U. S. N. (retired), Naval Academy, Annapolis, Ind.

- KICHARDS, CHARLES B., Professor, Mechanical Engineering, Sheffield Scientific School, Yale University, 227 Edwards St., New Haven, Conn.
- Richson, Carl, Naval Constructor, Royal Swedish Navy, Riddarholmen 11, Stockholm, Sweden.
- RITCHIE, JACOB S., Superintending Engineer, Luckenbach Towing and Wrecking Co., Foot 26th St., Brooklyn, N. Y.
- ROBERTS, EDWARD E., President, Roberts Safety Boiler Co., 39-41 Cortlandt St., New York. House. 263 Sixth Ave., Brooklyn, N. Y.
- ROBERT, WILLIAM P., Naval Constructor, U. S. N., Navy Yard, New York.
- ROBERTS, THOMAS GAINES, Naval Constructor, U. S. N., Naval Station, New Orleans, La.
- ROBINSON, EDWARD P., Superintendent, Atlantic Works, 80 Border St., East Boston, Mass.
- ROBINSON, RICHARD H. M., Naval Constructor, U. S. N., Bu. C. & R., Navy Department, Washington, D. C.
- ROBINSON, S. W., Professor Emeritus, Mechanical Engineering, Ohio State University, 1353 Highland Si., Columbus, Ohio.
- ROCHE, GEORGE W., Chief Engineer, U. S. N. (retired), 1304 McCullough St., Baltimore, Md.
- ROCK, GEO. H., Naval Constructor, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va.
- ROEDDER, O. C., Consulting Engineer, 38 Klauprecht-Str., Karlsruhe, Germany.
- ROELKER, CHARLES R., Rear-Admiral, U. S. N., 1434 Q St., N. W., Washington, D. C.
- ROELKER, H. B., Mechanical Engineer, 41 Maiden Lane, New York.
- ROSSELL, AXEL GUSTAF, Chief Draughtsman, Construction Department, Wm. Cramp & Sons' S. & E. B. Co., Philadelphie, Pa.

ROTTMER, HENRY E., Draughtsman, Bureau Construction and Repair, Navy Department, Washington, D. C.

Row, REUBEN ROBERT, General Superintendent, Marine and Mechanical Departments, Jas. Reilly Repair & Supply Co., 230 West St.

ROWEN, JOSEPH B., Fore River Shipbuilding Co., Quincy, Mass.

ROWLAND, CHARLES B., Assistant Secretary and Engineer, Continental Iron Works, Brooklyn, N. V. House, 329 Madison Ave., New York.

Rowland, T. F., President, Continental Iron Works, Brooklyn, N. Y.

House, 329 Madison Ave., New York.

ROWLAND, WILLIAM, 811 East Ninth St., New York.

RUHM, THOMAS F., Naval Constructor, U. S. N., Superintending Constructor, Moran Bros. Co., Seattle, Wash.

S

SABRI, S., Lieutenant-Commander, Imperial Ottoman Navy, Constantinople, Turkey.

SADLER, HERBERT C., Professor, Naval Architecture, University Michigan, Ann Arbor, Mich.

SADTLER, EDWIN BEALE, Naval Architect, The Harlan & Hollingsworth Co., Wilmington, Del.

SAVAGE, SILAS ANTHONY, Assistant Superintending Engineer, U. S. Light-House Board, Washington, D. C.

Schock, Edson B., Naval Architect, Yacht and Ship Broker, 9 Murray St., New York.

Schoffeld, Charles, Naval Architect and Surveyor, 39 Main St., Tottenville, N. Y.

SCHULZE, HENRY H., Fore River S. B. Co., Quincy, Mass. SCHWAB, CHARLES M., 111 Lroadway, New York.

Scott, J. Alvah, Naval Architect, 95 Liberty St., New York.

- Scribner, Edward H., Commander, U. S. N. (retired), Navy Yard, Boston, Mass.
- Seabury, Charles L., Gas Engine and Power Co., and Chas. L. Seabury Company, Consolidated, Morris Heights, New York.
- SEE, HORACE, Naval Architect and Marine Engineer, 1 Broadway, New York.
- Sellers, Coleman, Jr., President and Engineer, Wm. Sellers & Co., 1600 Hamilton St., Philadelphia, Pa.
- SHERWOOD, JOHN ROBERTS, Vice-President and General Manager, Baltimore Steam Packet Co., Baltimore, Md.
- SIMS, JAS. W., 21 Hope St., Hampton, Va.
- SKENTELBERY, CHARLES, Consulting Engineer, Jacobs, Davies & Barringer, 95 Milk St., Boston, Mass.
- SKINNER, HARRY G., President, The Wm. Skinner & Sons' S. B. & D. D. Co., Foot of Cross St., Baltimore, Md.
- SLOAN, HORACE T., JR., Chief Draughtsman, Floating Equipment, Pennsylvania R. R. Co., Jersey City, N. J.
- SLOANE, JOHN D., Dubuque, Iowa.
- SMITH, A. CARY, Naval Architect, 90 Wall St., New York.
 - SMITH, A. C., General Superintendent, Chicago Shipbuilding Co., Chicago, Ill.
 - SMITH, CARROLL S., New York Agent, Wm. Cramp & Sons' S. & E. B. Co., 100 Broadway, New York.
 - SMITH, FRANCIS B., Chief Engineer, Pittsburg Steamship Co., Rockefeller Building, Cleveland, Ohio.
 - SMITH, G. EDWARD, Smith & Robinson, Engineers, 605 Provident Bulding, Philadelphia, Pa.
 - SMITH, GODFREY L., Civil Engineer, Newport News S. B. & D. D. Co., Newport News, Va.

- SMITH, HENRY G., General Manager, Fore River Shipbuilding Co., Quincy, Mass.
- SMITH, JOHN A. B., Rear-Admiral, U. S. N. (retired), 570 Greene Ave., Brooklyn, N. Y.
- SMITH. SOMMERS N., Vice-President and General Manager, Neafie & Levy S. &. E. B. Co., Philadelphia, Pa.
- SMITH, STUART FARRAR, Naval Constructor, U. S. N., Bureau C. & R., Navy Department, Washington, D. C.
- SMITH, WILLIAM BLACKBURN, Engineer and Contractor,
 Perth Amboy, N. J.
- SMITH WM. STROTHER, Lieutenant-Commander, U. S. N., Bureau S. E., Navy Dept., Washington, D. C.
- SNEDDON, JAMES PRENTICE, Third Vice-President, Stirling Consolidated Boiler Co., Barberton, Ohio.
- Snow, Elliot, Naval Constructor, U. S. N., Navy Yard, Boston. Mass.
- SOLIANI, NABOR, Direxione, del Cantiere Navale, Gio Ansaldo & C., Sestri Ponente, Italy.
- Spangler, Henry W., Professor, Mechanical Engineering, University of Pennsylvania, Philadelphia, Pa.
- SPEAR, LAWRENCE, Vice-President, Electric Boat Co., Quincy, Mass.
- SPERRY, AUSTIN, Naval Architect, 131 Main St., San Francisco, Cal.
- STAHL, A. W., Naval Constructor, U. S. N., Navy Yard, Portsmouth, N. H.
- STEARNS, WILLIAM B., Naval Architect, Marblehead, Mass. STEVENS, JOHN A., Chief Engineer, Merrimock Mfg. Co., Lowell, Mass.
 - House-78 Hanks St.
- STILLMAN, FRANCIS HILL, President, The Watson-Stillman Co., 25 Dey St., New York.

- STOCKER, ROBERT, Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.
- STRATTON, E. PLATT, 66 Beaver St., New York.
- STUART, SINCLAIR, Ship and Engine Surveyor, 16-18 Exchange Place, New York.
- Sugitani, Yasnichi, Ship Yard Manager, Mitsu Bishi Dock Yards & Engine Works, Nagasaki, Japan.
- Swan, James, New York Shipbuilding Co., Camden, N. J.
- SWENSON, WILLIAM H. C., Managing Director, Trondhjems Shipbuilding and Engineering Co., Trondhjems, Norway.
- SYLVEN, WALFRID, Supt. Eng. Marine Construction, U. S. Light House Service, Light House Board, Washington, D. C.

Т

- TANDY, FRANK N., Marine Agent, Thorpe Bldg., cor. Broadway and Franklin St., Los Angeles, Cal.
- TAWRESEY, JOHN G., Naval Constructor, U. S. N., Superintending Constructor, Union Iron Works, San Francisco, Cal.
- Taylor, David W., Naval Constructor, U. S. N., Bureau Construction and Repair, Navy Dept., Washington, D. C.

:

- TAYLOR, STEVENSON, Vice-President, Quintard Iron Works, foot of East 12th St., New York.
- THAYER, IGNATIUS E., Naval Architect and Marine Engineer, 126 Beale St., San Francisco, Cal.
- THAYER, JR., HORACE HOLDEN, Naval Architect, 1208 Rodney St., Wilmington, Del.
- THOMAS, CARL CLAPP, Prof. Marine Engineering, Cornell University, Ithaca, N. Y.
- THOMPSON, ARTHUR WELLINGTON, 415 W. 115th St., New York.

- THOMPSON, JAMES A., 1030 Cauldwell Ave., Bronx, New York.
- Tobey, William L., Mechanical Engineer, Lockwood Mfg. Co., 85 Sumner St., East Boston, Mass.
- TOBIN, J. A., Past Asst. Engineer, U. S. N. (retired), 32 Vine St., East Providence, R. I.
- Todd, William Henry, General Superintendent, John N. Robins Co., Erie Basin, Brooklyn, N. Y. House—Hotel St. George, Brooklyn, N. Y.
- TORREY, JOHN D., Draughtsman, Bureau C. & R., Navy Dept., Washington, D. C.
- TOWNE, N. P., Chief Engineer, Wm. Cramp & Son's Ship and Engine Building Co., Philadelphia, Pa.
- TRUE, DWIGHT, Chief Hull Draughtsman, Great Lakes Engineering Works, Detroit, Mich.
- TROWBRIDGE, AMASA, Nonpareil Cork Works, 105 Hudson St., New York.
- Tuska, Gustave R., Consulting Engineer, 62 William St., New York.

U

UBSDELL, JOHN A., Great Lakes Engineering Works, Detroit, Mich.

\mathbf{v}

- VAN BUREN, JOHN D., New Brighton, N. Y.,
- VAN VLECK, FRANK, Bureau of S. E., Navy Dept., Washington, D. C.
- VARNEY, WILLIAM H., Naval Constructor, U. S. N., (retired)., 712 N. Carey St., Baltimore, Md.
- VARNEY, WILLIAM W., Mechanical Engineer, Attorney at Law, 710 N. Carey St., Baltimore, Md.

Vollman, Carl Wilhelm, President, Linde British Refrigeration Co., Coristine Bldg., Montreal, Can.

Volz, William E., Mechanical Engineer, Wheeler Condenser & Eng. Co., 42 Broadway, New York.

W

Waddington, James F., Draughtsman, New York Shipbuilding Co., Camden, N. J.

WALKER, LOUIS W., Chief Hull Draughtsman, P. R. R., Floating Dept., care Supt. M. P. P. R. R. Co., Jersey City, N. J.

WALKER, PERLEY F., Prof. of Mechanical Engineering,

University of Kansas, Lawrence, Kan.

Wallace, James C., President, American Shipbuilding Co., Cleveland, Ohio.

WALLACE, W. CARLILE, Marine and Consulting Engineer, representative John Brown & Co., Ltd., Whitehall Bldg., New York.

WALLACE, WILLIAM M., Computer, Bureau Construction and Repair, Navy Dept., 616 18th St. N. W., Washington, D. C.

Wallem, Axel B., Chief Draughtsman, Engine Dept., New York Shipbuilding Co., Camden, N. J.

WARD, CHARLES, Mechanical Engineer, Charleston, Kanawha Co., W. Va.

WARD, CHARLES EDWIN, Supt. of Ward Engineering Works, Charleston, W. Va.

WARREN, OGLE TAYLOR, Asst. Superintendent, Great Lakes Engineering Works, Detroit, Mich.

WARRINGTON, JAMES N., Mechanical Engineer, 1419
Dominis St., Honolulu, Hawaii.

WATERHOUSE, WILLIAM E., Naval Architect and Engineer, 15 Whitehall St., New York.

WATERS, J. W. LOWRY, 294 Carlton Ave., Brooklyn, New York.

- WATT, RICHARD M., Naval Constructor, U. S. N., Superintending Constructor, Fore River Shipbuilding Co., Quincy, Mass.
- WATTERSON, WILLIAM WALLACE, Superintendent of Construction, Pittsburg Steamship Co., Cleveland, O.
- Watts, Philip, Director of Naval Construction of the British Admiralty, 10 Chelsea Embankment, London, S. W., England.
- Weaver, William D., Mechanical Engineer, 55 Demarest Ave., Englewood, N. J.
- Webb, J. Bravor, Naval Architect, 129 Front St., New York.
- Webb, Thomas E., Naval Constructor, U. S. N. (retired), Port Washington, Nassau Co., N. Y.
- WEED, GEORGE E., President, Morgan Iron Works, 811 East 9th St., New York.
- Wellenkamp, Herman, Royal Marine Shipmaster, Wharf, Kiel. Germany.
- WESTMACOTT, ALFRED, Managing Director, Westmacott, Stewart & Co., Ltd., St. Helens, Isle of Wight, Eng.
- WETHERBEE, CHARLES PHELPS, Supt. Engineer, Bath Iron Works, Bath, Maine.
- WHEELER, CLIFTON HAROLD, C. H. Wheeler Condenser & Pump Co., Lehigh Ave. and 18th St.; residence, 521 Lincoln Drive, Pelham, Philadelphia, Pa.
- WHEELER, FREDERICK M., Mechanical Engineer, 159 Gates Ave., Montclair, N. J.
- WHEELER, HARRY, Supt. Engineer, Lamport & Holt Line, Pier 8, Brooklyn, N. Y.
- WHITAKER, MORRIS M., Editorial Staff, "The Motor Boat" 1133 Broadway, New York.
- WHITHAM, JAY M., Mechanical Engineer, 607 Bullits Bldg., Philadelphia, Pa.

- WHITNEY, EDWIN H., Supt., Eddy Valve Co., P. O. Box 295, Waterford, N. Y.
- WHITTELSEY, H. NEWTON, Williams, Whittelsey Co., Steinway, Long Island City, N. Y.
- WILEY, CLARENCE W., Marine Superintendent, Boston S. S. Co., Box 202, Seattle, Wash.
- WILKINSON, HENRI, Chief Surveyor, Bureau Veritas, 17 State St., New York.
- WILLARD, CHARLES FRANKLIN, Instructor of Technology, Boston, Mass.
- WILLIAMS, FAIRFAX, Chief Draughtsman, Hull Dept., The Moran Co., Seattle, Wash.
- WILLIAMS, LLEWELLYN, Supt. of Refrigeration, United Fruit Co., 131 State St., Boston, Mass.
- WILLIAMSON, JOHN D., JR., Manager, Williamson Bros., Aramingo Ave. and Cumberland St., Philadelphia, Pa.
- WILLIAMSON, WILLIAM C., Mechanical Engineer, Aramingo Ave. and Cumberland St., Philadelphia, Pa.
- WILSON, GEORGE HERBERT, 1324 G St. N. W., Washington, D. C.
- WINANT, WM. E., Leading Draftsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.
- WINSHIP, JAMES G., Mechanical Engineer and Salesman, Geo. F. Blake Mfg. Co., 114 Liberty St., New York. Residence—468 Green Ave., Brooklyn, N. Y.
- WINTRINGHAM, H. C., Naval Architect, Hudson Bldg., 32 Broadway, New York.
- Wood, Andrew, Supt., Pacific Iron Works, Bridgeport, Conn.
- Wood, Sidney L., Asst. Engineer, Newport News S. B. & D. D. Co., 232 49th St., Newport News, Va.
- Wood, William J., Naval Architect, Ship Surveyor and Consulting Engineer, 921 Postal Telegraph Bldg., 280 La Salle St., Chicago, Ill.

WOODY, WILLIAM HENRY, JR., C. P. T. Co., 95 Liberty St., New York.

Y

YAMAMOTO, NAGAKATO, Chief Draughtsman, Ship Dept., Mitsu Bishi Dock Yards & Engine Works, Nagasaki, Japan.

YEOMANS, CLIFTON, Draughtsman, Union Iron Works, San Francisco. Cal.

Young, James, Chief Draftsman, Hull Dept., New York Shipbuilding Co., Camden, N. J.

Young, Philip M., Chief Draughtsman, Eng. Dept., New York Shipbuilding Co., Camden, N. J. House—1526 Arch St., Philadelphia, Pa.

\mathbf{z}

ZAHM, FRANK BAKER, Naval Constructor, U. S. N., Bureau of C. & R., Navy Dept., Washington, D. C. Zeiter, Friedrich, Lecturer on Marine Engineering at Technikum, Bulowstr 22, Bremen, Germany.

ZIRPEL, RODOLPH, Supt. of Construction, U. S. Light House Service; house, 523 3d St. N. E., Washington, D. C.



ASSOCIATES

A

ACKERMAN, CHARLES, Elizabeth, N. J.

ACKERMAN, WILLIAM W., Elizabeth, N. J.

Adams, Roger P., Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va.

ALDRICH, HERBERT L., President and Manager, Marine Engineering, Whitehall Bldg., 17 Battery Place, New York.

ALLAN, ERNEST A., Draughtsman, 97 Oak St., Bath, Me. ALLAND, KARL E. W., Draughtsman, Ronnebygatan, Carlskrona, Sweden.

ALLEN, W. W., Consulting Engineer, Rooms 1307-8, 24 Broad St., New York.

AMORY, JOHN J., President, Gas Engine & Power Co., and Charles C. Seabury Co., Consolidated, Morris Heights, N. Y.

ANCKER, WALTER, Supt. Floating Equipment, B. & O. R. R. Co., Camden Station, Baltimore, Md.

ANDRESEN, ELLIOTT I. G., Asst. Manager, Holzapfel's Composition Co., 18 Broadway, New York.

Andrews, Jacob R., Hyde Windlass Co., Bath, Maine.

Arnold, Conway H., Captain, U. S. N., care Navy Dept., Washington, D. C.

\mathbf{B}

Bailey, John E., Asst. Naval Constructor, U. S. N., Navy Yard, Pensacola, Fla.

BAILEY, W. H., Agent, American Tube Works, 20 Gold St., New York.

Balls, William H., Instructor of Mathematics and Drawing, Philadelphia Trade School, Philadelphia, Pa.

- BARBEY, HENRY G., Yacht Designer, 52 Pine St., New York.
- BARNES, A. T., Contracting Engineer, Sharon, Mass.
- BARNES, W. H., President, Alleghany Valley Railway Co. Room 256, Broad Street Station, Philadelphia, Pa.
- BARRE, JOSEPH, of Jos. Barre & Co., 25 Fulton St., New York.
- BARRY, EDWARD B., Captain, U. S. N., Commanding "U. S. S. Kentucky," care Postmaster, New York.
- BATES, GEORGE HAROLD, Hampton Hall, Cranford, N. J. BATTIN, THOMAS WILSON, P. O. Box 207, Philadelphia,
- Bent, Stedman, Purchasing Agent, Maryland Steel Co., 306-311 Girard Bidg., Philadelphia, Pa. House—Overbrook. Pa.
- BICKFORD, ROBERT G., General Counsel, Newport News S. B. & D. D. Co., Newport News, Va.
- BISSET, GUY ALOYSIUS, Asst. Naval Constructor, U. S. N., Naval Station Cavite, P. I.
- BLISS, JOHN LORD, John Bliss & Co., Manufacturer of Marine Chronometers and Nautical Instruments, 128 Front St., New York.
- BLOOMSBURG, HARRY BROWN, Draughtsman, Baltimore Shipbuilding and Dry Dock Co. House address, 425 N. Carey St., Baltimore, Md.
- Boas, EMIL L., General Manager, Hamburg-American Line, 37 Broadway, New York.
- BORIE, ADOLPHE E., Vice-President, New Jersey Zinc Co., 71 Broadway. New York.
- BOUCHER, HORACE E., Mechanical and Model Shops, 105 Maiden Lane, New York.
- Bowes, Jr., Thomas D., M. E. Scientific Dept., New York Shipbuilding Co., Camden, N. J.
- BOYD, WILLIAM, Second Leading Draughtsman, Cramps' Shipyard, Philadelphia, Pa.

- Bradfield, George K., Special Representative, Vacuum Oil Co., 29 Broadway, New York.
 - House-Hackensack, N. J.
- Brill, Philip B., Calculating Draughtsman, Bu. C. & R., Navy Dept., Washington, D. C.
- BRINTON, FREDERICK S., Constructor, Marine Construction and Dry Dock Co., Mariner's Harbor, N. Y.
- Brown, WILLIAM L., P.ckands, Brown & Co., The Rookery Bldg., Chicago, Ill.
- BROWN, WILSON, 363 Grand Ave., Brooklyn, N. Y.
- Brownson, Willard H., Rar Admiral, Navy Dept., Washington, D. C.
- Bruton, John F., Foreman Machinist, Fore River Shipbuilding Co., Quincy, Mass.
- BRYAN, HENRY F., Lieut.-Commander, U. S. N., "U. S. S. Alabama." Address, care Navy Dept., Washington, D. C.
- BUCKELEW, CHARLES WILLIAM, Ship Designer, 126 W. 5th St., Plainfield, N. J.
- BUCKNAM, CAPTAIN R. D., U. S. Embassy, Constantinople, Turkey.
- BURNHAM, JOHN W., Chief Carpenter, U. S. N., C. & R. Dept. Navy Yard, Brooklyn, N. Y.
- Burton, Herbert, Draughtsman, Moran Bros. Co., Seattle. Wash.
- BUTTS, CHARLES SPOONER, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

C

- CARROLL, ROYAL PHELPS, Yachtsman, Knickerbocker Club, New York.
- CASSATT, ALEXANDER J., Broad St. Station, Philadelphia. Pa.
- CAVERLY, LEROY EUGENE, Hull Draughtsman, Union Iron Works, San Francisco, Cal.

- CHAMBERS, WASHINGTON I., Commander, U. S. N., Navy Dept., Washington, D. C.
- CHESTER, ARTHUR T., The Aeolian Co., 362 Fifth Ave., New York.
- Church, Edwin F., Jr., Professor of Mechanical Engineering, Box 622, Morganstown, W. Va.
- CHURCH, WM. CONANT, Editor, Army and Navy Journal, 99 Nassau St., New York.
- CLIFFORD, JAMES A., Electrical Engineer and General Salesman, B. F. Sturtevant Co., Jamaica Plain, Boston, Mass.
- CLYDE, THOMAS, Ship Owner, 19 State St., New York.
- CLYDE, WILLIAM P., Ship Owner, 19 State St., New York.
- COLE, WINTHROP, Draughtsman, Bureau of S. E., Navy Dept., Washington, D. C.
- Cox, Daniel, Draughtsman, Hull Dept., The Neafie & Levy S. & E. B. Co., Philadelphia, Pa.
- Cox, Leonard Martin Chief Engineer, L. H. & St. L. Ry. Co., Louisville, Ky.
- CRAIG, JOSEPH E., Rear-Admiral, U. S. N., Navy Yard, League Island, Pa.
- CRANE, ALEXIS, New York Manager and Special Expert Ship Equipment, Art Metal Construction Co., 346 Broadway, New York.
- CRANE, CLINTON H., care Tams, Lemoine & Crane, 52 Pine St., New York.
- Cross, Frank H., Draughtsman, 151 East 21st St., New York.
- Cushing, Nicholas, 25 Sound View Ave., New Rochelle, N. Y.

Dalton, Henry G., Managing Partner, Pickands, Mather & Co., Western Reserve Bldg., Cleveland, O.

DAVIDS, WILLIAM CULVER, Mechanical and Structural Engineer, 242 Donaldson Ave., Rutherford, N. J.

DAY, MAXWELL W., Assistant Engineer, Power and Mining Dept., General Electric Co., Schenectady, N. Y.

Delin, Karl Eric, Draughtsman, 470 Morris Ave., Elizabeth, N. J.

Deming, Richard, care American Surety Co., 100 Broadway, New York.

Denise, Edwin S., Marine Dept., Deane Steam Pump Co., 133 Liberty St., New York.

Dick, Thomas B., Chief Draughtsman, C. & R. Dept., Navy Yard, Mare Island, Cal.

DICKIE, JAMES SPIERS, Hull Drafting Room, Newport News S. B. & D. D. Co., 115 32nd St., Newport News, Va.

DIMOCK, WM. DE WOLF, Agent, New York Shipbuilding Co., 12 Broadway, New York.

Dock, Herman, Mechanical Engineer, Wyncote, Pa.

Dolan, Thomas, Director, Wm. Cramp & Sons' S. & E. B. Co., U. G. I. Bldg., Philadelphia, Pa.

Donaldson, Henry F., Flatiron Bldg., Madison Square, New York.

Donovan, Richard J., American Bridge Co., 1456 Frick Bldg., Pittsburg, Pa.

Downey, Wallace, President, Kingsley Water-Tube Boiler Co., 21 State St., New York.

DRAKE, FRANKLIN J., Rear Admiral, U. S. N., Retired, care Navy Dept., Washington, D. C.

DuBose, William Gunnell, Assistant Naval Constructor,, U. S. N., Naval Station, Cavite, P. I.

- DUNCAN, Wm. B., Jr., Havemeyer Bldg., Cortlandt St., New York.
- DUNTLEY, JOHN WHEELER, President, Chicago Pneumatic Tool Co., 1019 Fisher Building, Chicago, Ill.

Ю

- EATON, JAMES W., General Manager and Treasurer, New York Kerosene Oil Engine Co., 31 Burling Slip, New York.
- ECKERT, LOUIS, Fore River Shipbuilding Co., Quincy, Mass.
- EGGERT, ERNEST FREDERICK, Assistant Naval Constructor, U. S. N., Navy Yard, Boston, Mass.
- Elmquist, E., Naval Constructor, Swedish Navy, Carlskrona. Sweden.
- Engeman, W. A., President, Benvenue Granite Co., 41 Park Row, New York.
- ETTER, HARRY B., Designing Draughtsman, Wm. Cramp & Sons' S. & E. B. Co., 2326 N. 17th St., Philadelphia. Pa.
- EVANS, ROBLEY D., Rear-Admiral, U. S. N., 324 Indiana Ave., Washington, D. C.

F

- FARRINGTON, W. C., Manager, Southern Pacific Co., 29 Broadway, New York.
- FERGUSON, JR., WILLIAM BURDER, Assistant Naval Constructor, U. S. N., Navy Yard, New York.
- Field, Edward P., Naval Architect and Engineer, Maritime Bldg., New York.
- FOGARTY, W. B., Assistant Naval Constructor, U. S. N., Navy Yard, Portsmouth, N. H.

FROST, ELIHU B., Treasurer and Manager, Electric Boat Co., 11 Pine St., New York.

Furer, Julius Augustus, Assistant Naval Constructor, N. S. N., Navy Yard, New York.

G

GANTT, HENRY L., Mechanical Engineer, 65 Summit St., Pawtucket, R. I.

GARDINER, GEORGE N., 15 William St., New York.

GARDINER, GEORGE N., JR., Member of George N. Gardiner & Son., 15 William St., New York.

GARTLEY, ALONZO, General Manager, Hawaiian Electric Co., Honolulu, H. I.

GAUSE, JOHN RODNEY, I Broadway, New York.

GILLIS, JAMES H., Commodore, U. S. N. (retired), Melbourne Beach, Fla.

GIPS, ADRIAN, General Agent, Holland-America Line, 39 Broadway, New York.

GOODRICH, ALBERT W., President Goodrich Transportation Co., foot of Michigan Ave., Chicago, Ill.

GOULDER, HARVEY D., Proctor in Admiralty, 915 Rockefeller Bldg., Cleveland, O.

GREENE, S. CUYLER, Hotel Clayton, Beverley, Mass.

GRIFFIN, EUGENE, Vice-President, General Electric Co., 44 Broad St., New York.

GRISCOM, CLEMENT A., JR., 5 Nassau St., New York.

GRISCOM, RODMAN E., Land Title Bldg., Philadelphia, Pa.

GROVE, HENRY S., President, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.

GUILLAUDUE, WILLIAM LEGGETT, President and General Manager, Old Dominion Steamship Co., 81 to 85 Beach St., New York.

ŝ

- HAGSTROM, O. P., Leading Draugatsman, Newport News S. B. & D. D. Co., P. O. Box 628, Newport News, Va.
- HALL, FRANK DAVID, Assistant Naval Constructor, U. S. N., Assistant to the Superintending Constructor, Cramps Shipyard, Philadelphia, Pa.
- Hanscom, Isaiah Clifford, Draughtsman, Navy Yard, Portsmouth, N. H.
- Hebbinghaus, Hans Georg, Captain, Imperial German Navy, Naval Attache, German Embassy, Washington, D. C.
- HEDSTROM, BERNARD, Hull Draughtsman, New York Shipbuilding Co., Camden, N. J.
- HENRY, SIDNEY MORGAN, Assistant Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.
- HENRY, WILLIAM P., 204 West 55th St., New York.
- HEPBURN, FREDERIC, Passaic N. J.
- HERRIMAN, HORATIO NELSON, Surveyor to Great Lakes Register & Bureau Veritas, Cleveland, O.
- HILL, EBENEZER, General Manager, Norwalk Iron Works Co., S. Norwalk, Conn.
- HILKEN, PAUL GERHARD L., General Foreman, Hull Construction Marine Dept., Maryland Steel Co., Sparrow's Point, Md.
- HIRSCH, FEODOR C., Mechanical Engineer, 606 East 134th St., New York.
- HOUSTON, CHARLES E., Draughtsman, Neafie & Levy S. & E. B. Co., Philadelphia, Pa.
- Hughes, Alexander, Asst. Draughtsman, Navy Yard, Norfolk, 623 Jefferson St., Portsmouth, Va.
- Hughes, Charles Haynes, Contracting Engineer, 904 Spruce St., Philadelphia, Pa.
- HUMMEL, HOWARD H., 222 High St., Canton, Ohio.

HYDE, JOHN S., President and General Manager, Bath Iron Works, Bath, Me.

Ι

IRELAND, ROBERT L., M. A. Hanna & Co., Cleveland, O. IRVING, WASHINGTON, 622 California St., San Francisco, Cal.

J

JACKSON, WM. ELBERT, Draughtsman, Berlin Construction Co., 22 Clinton St., Newark, N. J.

JONES, FRANK BOWNE, Yacht Agent and Ship Broker, 29 Broadway, New York.

Joy, RICHARD P., Rooms 1 to 6 Newberry Bldg., Detroit, Mich.

JUPP, ALFRED J., Agent, The Lukenheimer Co., 68 Fulton St., New York.

K

KANE, JOHN F., Foreman, Pressed Steel Dept., American Brake and Foundry Co., Suffern, N. Y.

KATZENSTEIN, JACOB, Supt., L. Katzenstein & Co., 358 West St., New York.

KATZENSTEIN, MARTIN L., Manager, Marine Dept., International Steam Pump Co., 144 Liberty St., New York.

Keilholtz, P. O., Secy. and Supt., The United Electric Light and Power Co., Merchant's Bank Bldg., Baltimore, Md.

Keller, Otto B., with Keuffel & Esser Co., 56 Manhattan Ave., New York.

Kellogg, James W., Manager Marine Sales, General Electric Co., 10 Front St., Schenectady, N. Y.

Kemble, Parker H., President, Northern Connecticut Light and Power Co., Windsor Locks, Conn.

- KEMPFF, LOUIS, Rear Admiral, U. S. N. (retired), U. S. Navy Pay Office, San Francisco, Cal.
- Kirchhoff, C., Editor Iron Age, 14 and 16 Park Place, New York.

L

- LAMSON, PHILIP, Draughtsman, Hull Department, Newport News S. B. & D. D. Co., Newport News, Va.
- LANGWELL, CHARLES J., Estimator, New York Shipbuilding Co., Camden, N. J.
- LARKIN, FRANK PROVOOST, Draughtsman, Engineering Department, Fore River S. B. Co., Quincy, Mass.
- LAWLEY, ARTHUR C., Draughtsman, Geo. Lawley & Son Corp., 60 N. St. South Boston, Mass.
- LAWRENCE, GEORGE E., Asst. General Foreman, Hull Engineering Dept., Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa.
- LAWTON, NEWBURY D., 60 Wall St., New York.
- LINDSAY, JAMES G., SR. Member of James G. Lindsay & Co., Arcade Bldg., Philadelphia, Pa.
- LITTLEFIELD, CHARLES EDWIN, Navigator, School Ship "St. Mary's," Foot E. 24th St., New York.
- Longstreth, Charles, President, U. S. Metallic Packing Co., 427 N. 13th St., Philadelphia, Pa.
- LORD, FREDERICK KISSAM, Draughtsman, 105 Lord Ave., Bayonne, N. J.
- LORD, JOHN A., Carpenter, U. S. N., Bath Iron Works, Bath, Me.
- LUNDIN, ANDREAS P., Manager, The Welin Quadrant Davit, 17 Battery Place, New York.
- LYNN, JAMES J., Submarine Signal Co. of Boston, Mass., Port Huron, Mich.
- MABRY, CURTIS DARLING, care Wm. Gardner, 1 Broadway, New York.

Magoun, F. P., Atlas National Bank Bldg., Cincinnati, O. Martin, Julius, Master Electrician, Equipment Dept., Navy Yard, Brooklyn. N. 1.

House Address-445 West 21st St., New York.

MASON, LEWIS ALBERT, Hull Constructor, American Bridge Co., Ambridge, Pa.

Mason, Newton E., Rear Admiral, U. S. N., Chief of the Bureau of Ordnance, Navy Dept., Washington, D. C.

Mathewson, Thomas S., Vice-Pres. and Mgr., Marine Machine and Conveying Co., 318 Broadway, New York.

McEntee, William, Assistant Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.

McGowan, Wm. Cullen, Asst. Draughtsman, Dept. of C. & R., Navy Yard, Pensacola, Fla.

McGuire, James C., Consulting Engineer, 1410 Havemeyer Bldg., 26 Cortlandt St., New York.

McIlvain, Edward M., Reading, Penn.

MCINTYRE, EDWARD, McIntyre & Henderson, Shipbuilders, Foot of Montgomery St., Baltimore, Md.

McKay, George Theodore, Stearns & McKay, Naval Architects and Yacht Builders, Marblehead, Mass.

McLean, Thomas C., Captain, U. S. N., care of Navy Dept., Washington, D. C.

McMillan, Gilbert N., Gorham, N. H.

McQuesten, Fred, Vice-President, The George McQuesten Co., 27 Kilby St., Boston, Mass.

McQuilkin, George, Jr., Engineer, Elkton, Md.

MEEK, JOHN E., Care The H. W. Johns-Manville Co., 100 William St., New York.

MEEK, WENTWORTH W., Naval Architect, P. O. Box 1132, Bath, Me.

- MEIGS, JOHN F., Engineer of Ordnance, Bethlehem Steel Co., South Bethlehem, Pa.
- MILLARD, WALTER HENRY, Naval Architect, 32 Broadway, New York.
- MILLER, JACOB W., Vice-President, New England Navigation Co., Pier 19, North River, New York.
- MILLER, THOMAS I., Captain, 424 Second St., Brooklyn, N. Y.
- MILLS, ISAAC BONNEY, Naval Architect, 15 Exchange St., Boston, Mass.
- MITCHELL, JOHN, Vessel Owner, Mitchell & Co., Rockefeller Bldg., Cleveland, O.
- MINUSE, ALFRED WYNN, Webb's Academy, Fordham Heights, New York.
- MOORE, HARRISON B., President, N. Y. Lighterage and Transportation Co., 26 Broadway, New York.
- Morgan, Edwin D., 100 Broadway, P. O. Box 706, New York.

N

- Nebolsine, Commander A. K., Naval Attache, Russian Embassy, Washington, D. C.
- New, HARRY STEWART, Draughtsman, 139 Third St., Long Island City, N. Y.
- Newberry, Truman H., Assistant Secretary of the Navy, Washington, D. C.
- NIBLACK, ALBERT P., Lieut.-Commander, U. S. N., U. S. F. S. Chicago, care Postmaster, San Francisco, Cal. NILES, MARSTON, 350 Broadway, New York.
- Nolan, John J., Fore River Shipbuilding Co., Quincy, Mass.
- NORTON, HAROLD F., Draughtsman, U. S. N., Newport News S. B. & D. D. Co., P. O. Box 702, Newport News, Va.

- O'BRIEN, EDWARD C., President and General Manager, Cuban and Pan-American Express Co., 62 Broadway, New York.
- O'CONNOR, BERNARD F., 3 Washington Ave., Brooklyn, N. Y.
- ORCUTT, CALVIN B., President, Newport News Shipbuilding and Drq Dock Co., 1 Broadway, New York.

P

- PAINE, CECIL E., Engineer, Hyde Windlass Co., Bath, Me. PATTISON, HUGH, Asst. Engineer, Electric Traction, P. R. R., 10 Bridge St., New York.
- Pendleton, F. S., Manager, Pendleton Bros., Shipbuilders, Belfast. Me.
- Perkins, Edwin Alan, Naval Architect and Engineer, 8-10 Bridge St., New York.
- PETERSON, OTTO L., 1 Broadway, New York.
- Petre, Axel E., General Manager, Midvale Steel Co., Philadelphia, Pa.
- PFISTER, CARLE ERMANUS, Lieutenant, Royal Italian Navy, Naval Attache to the Italian Embassy, Washington, D. C.
- PHILLIPS, WILLIAM H., Manager, Marine Dept., F. W. Devoe & C. T. Reynolds Co., 101 Fulton St., New York.
- PIEK, WILLIAM F., JR., Holland-America Line, Rotter-dam, Holland.
- Pierce, Walter Louis, Secy. and General Manager, Lidgerwood Manfg. Co., 96 Liberty St., New York.
- Pomerov, L. R., Care General Electric Co., 44 Broad St., New York.
- Powelson, Wilfrid Van Ness, Manager, St. Louis Electric & Power Co., St. Louis, Mo.

- RANDLE, WILLIAM GEORGE, Marine Superintendent, New York Shipbuilding Co., Camden, N. J. House—Chester, Pa.
- RAOUF, H., Lieutenant, I. O. N., British P. O., Constantinople, Turkey.
- RAVEN, ANTON A., President, American Bureau Shipping and Atlantic Mutual Insurance Co., 51 Wall St., New York.
- RAYMOND, JAMES RICHARDSON, Raymond Releasing Hook, Room 315, 24 State St., New York.
- REA, SAMUEL, Third Vice-Pres., Pennsylvania R. R., Room 225, Broad St. Station, Philadelphia, Pa.
- REED, HENRY S., 12 West 31st St., New York.
- RICE, HENRY, Naval Architect and Consulting Engineer, 202 Main St., Buffalo, N. Y.
- RICHARDSON, EUGENE M., Vicec-Pres., Sherwin-Williams Co., Cleveland, O.
- ROACII, STEPHEN W., Manager, Morgan Iron Works, Foot of East oth St., New York.
- ROBBINS, ROWLAND A., President, Manhattan Supply Co., 127 Franklin St., New York.
- ROGERS, WALTER H., Draughtsman, Hull Construction, Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa.
- Ross, Charles E., Engineer, 17 State St., New York.
- Rossow, Ernest Fredezick, Draughtsman, C. & R. Dept., Navy Yard, Mare Island, 908 York St., Vallejo, Cal.
- Rowen, John H., Lieutenant, U. S. N., care Navy Dept., Washington, D. C.

S

Sabin, Alvah Horton, 432 Sanford Ave., Flushing, N. Y. Satterlee, Herbert L., Late Lieutenant, U. S. N., 120 Broadway, New York.

- Schooler, Clifford Vannice, Asst. Draughtsman, Navy Yard, Norfolk; 511 County St., Portsmouth, Va.
- Schreidt, Frank, President, Safety Cylinder Valve Co., Mansfield, O.
- SCHRIENER, WATSON C., Draughtsman, New York Shipbuilding Co., Camden, N. J. Residence—1820 N. 12th St., Philadelphia, Pa.
- Scott, Frank, Crosby Steam Gauge & Valve Co., 16 Dey St., New York.
- Sebree, Uriel, Captain, U. S. N., Naval Secretary, Light House Board, Dept. of Commerce and Labor, Washington, D. C.
- SHACKFORD, WILLIAM GARDNER, Retired Shipmaster, South Orange, N. J.
- SHIELDS, HENRY B., Draughtsman, Office of the Superintending Constructor, New York Shipbuilding Co., Camden, N. J.
- SINGER, WALTER H., General Manager, Singer Dock Co., Duluth, Minn.
- SMITH, ALEXANDER R., 2271 Aqueduct Ave., Bronx Borough, New York.
- SMITH, ALFRED G., General Manager, N. Y. and Cuba Mail Steamship Co., 90 Wall St., New York.
- SMITH, HAYDEN HOBART, Manager, Marine Dept., The Thresher Electric Co., Room 905, 17 Battery Place, New York.
- SMITH, TOWNSEND J., Hull Draughtsman, T. S. Marvel & Co., Newburgh, N. Y.
- SNYDER, HENRY S., Vice-President, Bethlehem Steel Co., South Bethlehem, Pa.
- SPEARMAN, EDWARD M., Consulting Engineer and Naval Architect, Knutsford, Cheshire, England.
- Spilman, J. A., Asst. Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.

Ł

SPRAGUE, F. J., Technical Director, Sprague Electric Co., 20 Broad St., New York.

STANTON, SAMUEL WARD, Publisher, Nautical Gasette, 156 Fifth Ave.. New York.

STARKE, FREDERICK C., 173 25th St., Milwaukee, Wis.

STEPHENS, WILLIAM P., 32d St. and Ave A, Bayonne, N.J. STOKES, ANSON PHELPS, 100 William St., New York.

SUTPHEN, HENRY R., Vice-President and General Manager, Electric Launch Co., Bayonne, N. J.

T

TAFT, HARRISON, 36 West 37th St., New York.

Tams, J. Frederic, Ship Broker and Marine Contractor, 52 Pine St., also 4 Lexington Ave., New York.

THOMAS, S. B., Lieutenant, U. S. N., Torpedo Station, Newport, R. I.

THRESHER, ALFRED ADDISON, Consulting Engineer, 29 Broadway, New York.

Toch, Henry M., Manufacturer of Marine Cements and Ship Bottom Paints, 320 Fifth Ave., New York.

TODT, EDWARD GEORGE, Vice-President and General Manager, Gunnell Machine Co., Manitowoc, Wis.

TURNER, LOUIS HORATIO, Surveyor, Bureau Veritas, San Francisco, Cal.

v

Vanderbilt, Aaron, Vice-President, Wheeler Condenser & Engineering Co., 42 Broadway, New York.

Van Duzer, Louis S., Lieutenant-Commander, U. S. N., care of Navy Dept., Washington, D. C.

VEIT, RICHARD C., Manager, Lighterage Dept., Standard Oil Co., 26 Broadway, New York.

VREELAND, CHARLES EDWARD, Captain, U. S. N., 808 Mills Building, Washington, D. C. Wales, Charles M., 11 Broadway, New York.

Waters, George Henry, Secretary, F. A. Verdon Co., West New Brighton, S. I., N. Y.

WEINZ, CHARLES J., Constructor, Heat and Cold Insulation, 247 West 123d St., New York.

Wells, Roger, Jr., Lieut.-Commander, U. S. N., care Nacy Dept., Washington, D. C.

West, Charles Cameron, Manager, Manitowoc Dry Dock Co., Manitowoc, Wis.

WEST, GORDON B., 65 Myrtle Ave., Brooklyn, N. Y.

WHITE, WILLIAM P., Commander, U. S. N., Commercial Bank Building, Cleveland, O.

WHITE, GEORGE A., Asst. General Manager, Hudson River Day Line, Desbrosses St. Pier, New York.

WHITON, CHAUNCEY GILBERT, Treasurer, The New Bedford, Martha's Vineyard and Nantucket Steamboat Co., P. O. Box 284, 7 Commercial St., New Bedford, Mass.

Wierdsma, John R., Netherlands Steam Navigation Co., Rotterdam, Holland.

WILLIAMS, HENRY, Asst. Naval Constructor, U. S. N., Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

Wise, William C., Rear-Admiral, U. S. N. (retired), Navy Dept., Washington, D. C.

WITT, OSCAR FREDRIK, Hull Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va.

WOLVIN, AUGUST B., Gen. Mgr., American S. S. Co., 303 Board of Trade, Duluth, Minn.

Wood, David, Draughtsman, C. & R. Dept., Navy Yard, New York.

Wood, Howard, 1016 Spruce St., Philadelphia, Pa., or Conshohocken, Pa.

Woods, Allen D., Marine Engineer, C. R. R. of N. J.,

Jersey City, N. J.

WRIGHT, ROBERT KEMP, P. O. Box 390, Caracas, Venezuela.

WRIGHT, WILLIAM LLOYD, Draughtsman, Bureau of C. & R., Navy Yard, Washington, D. C. House—1908 G St. N. W.

 \mathbf{z}

ZETTERMAN, AXEL E., Marine Engine and Boiler Draughtsman, Fore River Shipbuilding Co., Quincy, Mass.



JUNIORS

A

ANDERSON, ROBERT EARLE, C. E., Draughtsman, Bureau of C. & R., Navy Dept., Washington, D. C.

В

Bailey, Daniel, Ship Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

BAILEY, ROBERT W., Ship Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

BAUM, ARTHUR ELMO, Draughtsman, Hull Dept., Bath Iron Works, 95 Union St., Bath, Me.

Berliner, Richard W., care V. J. Hedden & Sons Co., 8 Colborne St., Toronto, Canada.

BIMSON, JAMES A., Draughtsman, Engineering Dept., Bath Iron Works, Bath, Me.

BINLEY, WM., Jr., Leading Ship Draughtsman, Navy Yard, New York.

Bowen, Almon F., Draughtsman, Newport News S. B. & D. D. Co., 224 49th St., Newport News, Va.

BOYD, STEPHEN B., Ship Draughtsman, C. & R. Dept., Navy Yard, Boston, 20 Holden St., Malden, Mass.

Bragg, Ross W., Draughtsman, N. Y. Shipbuilding Co., Camden. N. Y.

Bretteville, Alexander de, Manager, Main St. Iron Works, 131 Main St., San Francisco, Cal.

Briner, Emil Amandus, M. E., 438 Queen Lane, Germantown, Pa.

Brooks, Louis C., Master Electrician, C. & R. Dept., Navy Yard, Boston, Mass.

- Callis Daniel M., Estimator, Scientific Department, Maryland Steel Co., Sparrow's Point, Md.
- Caswell, W. B., Draughtsman, 269 W. 136th St., New York.
- CHRISTOPHERSEN, HERBERT HENSHAW, 7 Edgerton Terrace, East Orange, N. J.
- CLARK, REUBEN B., Manager, E. H. Godshalk & Co., ft. Cooper St., Camden, N. J.
- CLARY, JOSEPH W., Draughtsman, Bureau of C. & R., Navy Dept., Washington, D. C.
- COLBY, HALDWELL S., Mechanical Draughtsman, C. D. Mosher, 1 Broadway, New York.
- CRAIN, JOHN J., Draughtsman, 36 Edison Park, Quincy, Mass.
- CRANE, FRANK H., Supt., Theo. Crane's Sons Dry Dock & Shipyard, Erie Basin.
 - House—295 Garfield Place, Brooklyn, N. Y.
- CREGIER, ABBOTT, M., Asst. in Mech. Engineering, Colummia University, New York.
- House—119 East Lincoln Ave., Mt. Vernon, N. Y. CROSBY. RALPH W., of Daniel Crosby & Son. Osterville.
- Crossy, Ralph W., of Daniel Crosby & Son, Osterville, Mass.
- CUMMINGS, LEE H., Draughtsman, 97 Kingston Ave., Brooklyn, N. Y.
- Curtis, Arthur V., Draughtsman, C. & R. Dept., Navy Yard, Washington, D. C.
- CUTLER, EDWARD OSGOOD, Draughtsman, Office of Superintendent of Construction, Bath Iron Works, Bath, Me.

\mathbf{D}

DAMON, EDWARD ORNE, JR., Office of Superintending Constructor, Fore River Shipbuilding Co., Quincy, Mass. DAVIS, MATTHEWS ERASTUS, Asst. Foreman of Ships, New York Shipbuilding Co., Camden, N. J.

House—128 So. Broad St., Woodbury, N. J.

DAVIS, OLIVER M., 91 Miami Ave., Detroit, Mich.

DeGraw, Harold Mason, Draughtsman, Marine Dept., Maryland Steel Co., Sparrows Point, Md.

DONNELLY, PATRICK J., B. Sc. Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

Dougherty, Hugh, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

E

ENGERDT, JOHN ARNHOLD, Inspector Steam Turbines, Inspection and Testing Dept., Westinghouse Machine Co., P. O. Box 176, Ambridge, Pa.

ELLIS, WALTER L., Draughtsman, Hyde Windlass Co., Bath, Me.

ERISMANN, MARTIN C., Yachting Editor, Forest & Stream, 346 Broadway, N. Y.

Evans, John Lancaster, Ship Draughtsman, Bath Iron Works, 212 Centre St., Bath, Me.

Ewen, Albert E., Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

F

Frauenfelder, Jos. Barraja, Draughtsman, Electric Boat Co., Quincy, Mass.

FERNALD, BENJAMIN G., Sales Eng., Northern Electric Mfg. Co., 29 Broadway, N. Y.

Fils, Ernest, Draughtsman, John N. Robbins Co., Erie Basin, Brooklyn, N. Y.

FINKENAUR, WM. M., Engine Draughtsman, Burlee Dry Dock Co., Port Richmond, S. I.

FISHER, LEE DAVID, Chief Engineer, Fisher Construction Co., Joliet, Ill,

- FRENCH, FRANCIS J., Ship Draughtsman, C. & R. Dept., New Orleans, La.
- FRIEBLE, JOHN F., Draughtsman, 272 W. 141st St., New York.

G

- GRIESHABER, HUGO EUGENE, Chief Hull Draughtsman, Electric Boat Co...
- GROGAN, HARLEY HICHBORN, Asst. Draughtsman, Office of Supt. Constructor, N. Y. Shipbuilding Co., Camden, N. J.

H

- HACK, HENRY J., Draughtsman, Camden Iron Works, Camden, N. J.
- HALL, FRANCIS GRANGER, JR., Pies't & Gen'l Mgr., Naval Electric Co., 79 Cortlandt St., New York.
- Hammond, Jay D., Draughtsman, 156 Richmond Ave., Port Richmond, N. Y.
- HAUPT, JOHN, 198th St., Bedford Park, N. Y.
- HAYS, DAVID, Draughtsman, Old Dominion S. S. Co., 81 Beach St., New York.
- Hewins, Lyman Foster, Draughtsman, C. &. R. Dept., Navy Yard., Washington, D. C.
- HIBBARD, HARRY LYMAN, Electrical Engineer, Bu. C. & R., Navy Dept., Washington, D. C.
- HUNNEWELL, FRED. A., Chief Draughtsman, Office of Suptg. Constructor, N. Y. Shipbuilding Co., Camden, N. J.
- HUNT, HERMAN REYNOLDS, Draughtsman, Office of Suptg. Constructor, Moran Brothers Co., Seattle, Wash.
- Hussey, James W., Naval Architect, E. H. Godshalk & Co., Philadelphia, Pa.
- HUSSEY, WM. FRANKLIN, Hull Draughtsman, Neafile & Levy S. & E. B. Co., Philadelphia, Pa.

JENKINS, SANFORD CUYLER, Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va.

Jennings, Alfred C., Hull Draughtsman, Harlan & Hollingsworth Co., Wilmington, Del.

JONSON, HERMAN, Consulting and Contracting Engineer, 79 E. 130th St., New York.

Johnson, Eads, Contracting Engineer, James Shewan & Sons, Ft. E. Houston St., New York.

K

KEENAN, WALTER COOK, Draughtsman, 1034 Milan St., New Orleans, La.

Kenney, Lewis H., Draughtsman, Office of Inspector of Machinery, The Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa.

KIMBALL, WALTER EVERAND, Asst. Draughtsman, U. S. N., Fore River Shipbuilding Co., Quincy; No. 1 Robin Hood St., Roxbury, Mass.

Koon, Sidney Graves, Editor Marine Engineering, 17 Battery Place, New York.

KREER, JOHN G., J. T. Ryerson & Son, 18 Milwaukee Ave., Chicago, Ill.

L

LEE, HAROLD, Draughtsman, Naval Architect and Engineer, Elliott Bay Iron Works, Seattle, Wash.

Lewis, Arthur Schultz, M. E., care J. W. Masury & Co., 50 Jay St., Brooklyn, N. Y.

LEITCH, ALBERT CLARK, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

Lesley, Everett P., Draughtsman, Experimental Model Basin, Navy Yard, Washington, D. C. LOOMIS, ALLEN, Instructor of Naval Architecture, 923 So. State St., Ann Arbor, Mich.

LOOS, CHARLES L., JR., Purchasing Agent, Detroit Shipbuilding Co., Detroit, Mich.

LUDERS, ALFRED E., Draughtsman, Electric Launch Co., Bayonne, N. J.

LUEHRS, DANIEL MICHAEL, Student Naval Architecture, 1656 E. 55th St., Cleveland, O.

M

MACHATTIE, WILLIAM, Foreman Builder, Marine Engine & Machine Co., Harrison, N. J.

MARTIN, GILBERT DARLING, Draughtsman, Marine Dept., Maryland Steel Co., Sparrow's Point, Md.

McComb, Samuel Deems, Draughtsman, 47 Lafayette Ave., Port Richmond, N. Y.

McCormack, James William, J. L. Mott & Co., 118 sth Ave., New York.

MEEKER, H. L., Draughtsman, C. & R. Dept., Navy Yard. House—96 Etna St., Brooklyn, N. Y.

MERRILL, AMBROSE MOODY, Draughtsman, C. & R. Dept., Navy Yard, New York.

MITCHELL, LELAND R., Marine Engine Draughtsman, Bath Iron Works, 476 Middle St., Bath, Me.

MORRISON, CLARENCE LEE, Evergreen Hall, Woodbury, N. I.

N

NEWELL, WILLIAM STARK, Bath, Me.

NEWTON, WILLIAM BUXTON, Engine Draughtsman, Bath Iron Works, 850 Washington St., Bath, Me.

NORTH, CHARLES A., JR., Draughtsman, 55 High St., Woodbury, N. J.

NORTON, WILLIAM J., General Manager, Federal Electric Co., 317 W. 42nd St., New York. O'Donnell, Charles F., Boatbuilder, C. & R. Dept., Navy Yard.

House-56 Russell St., Brooklyn, N. Y.

OSBORN, EDWARD B., Foreman with W. R. Osborn, Croton-on-Hudson, N. Y.

OVERMAN, AUSTIN EVERETT, 429 Penn St., Camden, N. J.

P

PATTERSON, HAROLD W., Hull Draughtsman, Gas Engine & Power Co., and Charles L. Seabury Co., Consolidated, Morris Heights, N. Y.

POTTER, JOSEPH S., Hull Draughtsman, Gas Engine & Power Co., and Charles L. Seabury Co., Consolidated, Morris Heights, N. Y.

PURDY, JAMES G., Chief Hull Draughtsman, Gas Engine & Power Co., and Charles L. Seabury Co., Consolidated, Morris Heights, N. Y.

Purver, Geo. M., Civil Engineer, Passaic Steel Co., Paterson, N. J.

R

READ, WALTER AUGUSTINE, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

RICE, WINTHROP M., Draughtsman, Electric Launch Co., Bayonne, N. J.

ROBERTS, ARTHUR O., Draughtsman, Box No. 294, Manchester, N. H.

S

SHERIDAN, RICHARD BRINSLEY, Draughtsman, Brown Hoisting Machinery Co., St. Clair St., Cleveland, O. SIMPSON, DWIGHT S., Student Naval Architecture, 125 Edgemore Lane, Ithaca, N. Y.

- SIMPSON, ROBERT C., Naval Architect, 70 Long Wharf, Boston, Mass.
- SMITH, GRANVILLE, Hull Draughtsmaan, 3121 14th St. N. W., Washington, D. C.
- SMITH, JOSEPH DICKINSON CLAIR, Hartington, Neb.
- STAPLES, HORACE A., Bridgeport Brass Co., Bridgeport, Conn.
- STEVENS, EDWIN A., JR., 68 Broad St., New York.
- STEWART, LEE R., in charge of Mold Loft, New York Shipbuilding Co., Camden, N. J.
- Stone, Preston S., Office of Suptg. Constructor, Moran Brothers Co., Seattle, Wash.
- STUART, DONALD, 85 Chambers St., New York.
- SULLIVAN, JOHN F., Asst. Engineer, Penn. R. R. Tunnels, Weehawken, N. J.; 26th St. and Nicholas Place, New York.
- Swasey, A. Loring, of Swasey, Raymond & Page, Naval Architects and Engineers, Colonial Building, Boston, Mass.

T

- TAPPEN, ALEXANDER B., 234 Genesee St., Utica, N. Y. TERRY, ARTHUR LINVILLE, JR., Engineer, United Water Improvement Co., 29 Centre St., Woodbury, N. J.
- THURSTON, PERRY K., Draughtsman, Bureau of T. E., Navy Dept., Washington, D. C.
- THUNBERG, ERNST, JR., Superintendent of Gun Works, Bafors-Guttspong Co., Bafors, Sweden.
- TOWLE, HOWARD C., Standard Oil Co., 26 Broadway, New York.
- TURNER, CHARLES C., Hull Draughtsman, George Lawley & Sons Corp., Boston, Mass.

 House—10 Charles St., Quincy, Mass.

UZELMEIER, WILLIAM, Marine Draughtsman, Wm. Cramp & Sons Co., Philadelphia, Pa. House—3170 Salmon St., Philadelphia, Pa.

W

WALLACE, WILLIAM L., JR., Student Naval Architecture, Cornell University, 309 Eddy St., Ithaca, N. Y.

Wassilief, Wassily W., Draughtsman, L. Power & Co., Philadelphia, Pa.

Watts, J. Murray, Secretary, The O. Sheldon Co., Yacht Builders, Neponset, Boston, Mass.

Webb, Thomas E., Jr., Hull Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y. House—218 82d St.

WHITAKER, FRANK B., Chief Draughtsman, Naval Constructor's Office, Moran Bros Co., Seattle, Wash.

WHITE, WARREN A., Draughtsman, Fore River S. B. Co., Quincy, Mass.

WHITE, WILLIAM WESLEY, Draughtsman, 1001 Union Trust Building, Baltimore, Md.

WHITEHOUSE, FREDERICK CHARLES, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

WHITTELSEY, DANIEL I., Superintendent, Williams-Whittelsey Co., Steinway, Long Island City, N. Y.

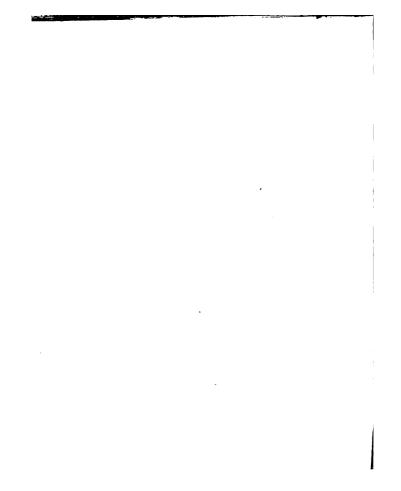
WIGHT, ROGER WILLARD, 290 Clinton Ave., Brooklyn, N. Y.

WRIGHT, HENRY C., JR., Hull Draughtsman, Bath Iron Works, Bath, Me.

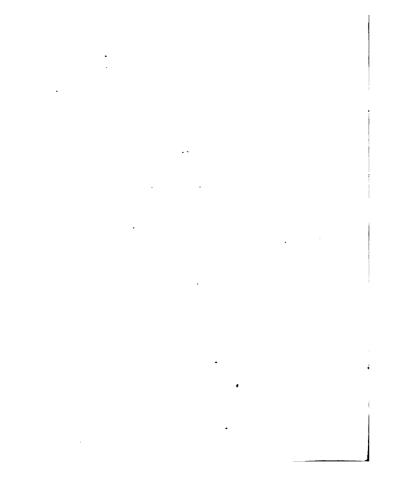
Y

YEOMANS, CLYDE, Cor. Mott & Hollywood Aves., Far Rockaway, N. Y.

YOUNG, WILLIAM J. J., Asst. Draughtsman, Fore River Shipbuilding Co., Quincy, Mass.



CONSTITUTION AND BY-LAWS OF THE SOCIETY OF * Naval Architects and Marine Engineers



CONSTITUTION AND BY-LAWS

ARTICLE I.

Name and Object.

- 1. The name of the Association shall be, "The Society of Naval Architects and Marine Engineers."
- 2. Its object shall be the promotion of the art of shipbuilding, commercial and naval.
- 3. In furtherance of this object, annual meetings shall be held for the reading and discussion of appropriate papers and interchange of professional ideas, thus making it possible to combine the results of experience and research on the part of shipbuilders, marine engineers, naval officers, yachtsmen, and those skilled in producing the material from which ships are built and equipped.

ARTICLE II.

Membership.

The Society shall consist of Members, Associates, Juniors, Honorary Members and Honorary Associates.

- 2. Members.—(1) The class of Members shall consist exclusively of Naval Architects, Marine and Mechanical Engineers, including Professors of Naval Architecture or Mechanical Engineering in colleges of established reputation.
- (2) A Candidate for this class must not be less than twenty-five years of age and comply with the following regulations: He shall submit to the Council a statement showing that he has been engaged in the practice of his profession, in a responsible capacity, for at least three years, and setting forth the grounds upon which he bases his claim to membership. This statement shall be signed by three members, who shall certify to their personal knowledge of the candidate and approval of his statement.
- (3) In the case of persons not American citizens, the signatures of three members shall be required in confirmation of their personal knowledge of the candidate's scientific attainments.
- (4) If three-fourths of the members of the Council present are in favor of the admission of the candidate his name shall be submitted to the members of the Society at the next meeting; the voting to be by ballot, should a ballot be demanded.
- 3. Associates.—(1) The class of Associates shall consist of all persons who, by profession,

occupation, or scientific attainments, are qualified to discuss the qualities of a ship.

- (2) Candidates for this class shall submit to the Council a written statement of their qualifications for membership. If considered by three-fourths of the Council present duly qualified for associate membership their names shall be submitted to the Society at the next meeting, to be voted upon by the Members and Associates; voting to be by ballot, should a ballot be demanded.
- 4. The proportion of favorable votes for deciding the election of Members and Associates shall be at least four-fifths of the number recorded.
- 5. Juniors.—(1) The class of Juniors shall consist of graduates of technical schools of established reputation, or persons who have had not less than two years' practical experience in marine engine works or shipyards.
- (2) Candidates must be at least eighteen years of age and certify their intention to continue in the profession and become naval architects and marine engineers.
- (3) Juniors shall be eligible for transfer to the class of Members after fulfilling the necessary conditions.
 - (4) The admission of Juniors shall be by a

favorable vote of three-fourths of the members of the Council present.

- (5) Juniors shall have no voice in the government of the Society or admission of members.
- 6. Honorary Members and Honorary Associates.—The Council may elect Honorary Members and Honorary Associates, the total number not to exceed twenty-five. They shall be persons of acknowledged eminence in their profession upon whom the Council may see fit to confer an honorary distinction.

ARTICLE III.

Dues.

1. The entrance fees, payable on admission to the Society, shall be as follows:

Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates, no fees.

- 2. The annual dues shall be as follows:
- Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates, no dues.
- 3. A member transferred from one grade to another shall pay the difference between the entrance fees of the two grades, and his annual dues shall be those of the grade to which transferred.

- 4. The annual contributions shall be payable in advance on the first day of January. The Secretary shall notify each member of the amount due for the ensuing year at the time of giving notice for the annual meeting. On election each member shall pay his entrance fee and annual dues for the current year and be entitled to rereive the proceedings of the annual meeting of the year during which he is elected.
- 5. Members and Associates can compound for all future dues and become Life Members or Life Associates by making a single payment of two hundred dollars and signing an agreement to conform to any future amendments to the Constitution and By-Laws.
- 6. Members are entitled to no return fees upon severing their connection with the Society.
- 7. Any member whose dues are more than three months in arrears shall be notified by the Secretary. Should his dues become six months in arrears he shall be again notified by the Secretary and his rights as a member suspended. Should his dues become one year in arrears the delinquent member shall forfeit his membership in the Society unless the Council may deem it expedient to extend the time of payment.
- 8. The Council may, in its discretion, temporarily suspend the annual payment of dues by any

member whose circumstances have become such as to make such payment impossible, and may, under similar circumstances, remit the whole or part of dues in arrears.

- 9. No name shall be entered on the rolls as Member, Associate or Junior, nor shall the privileges of membership be enjoyed until all dues shall have been paid; if the payment be delayed for more than six months from the date of election, the same shall be void unless the Council otherwise direct.
- 10. Should the expulsion of any member be judged expedient by five or more members, they must draw up and sign a proposal requesting such expulsion, delivering the same to the Secretary, to be laid before the Council.
- (2) If the Council do not find reason to concur in the proposal, no entry thereof shall appear in the minutes, nor shall any public discussion thereon be permitted.
- (3) If, however, the Council find the charges contained in the proposal for expulsion substantiated, the accused member shall be notified and given an opportunity to resign. If he avails himself of this privilege, no entry shall be made on the minutes nor public discussion of the case be permitted. But if he declines to resign and offers no satisfactory explanation of the charge,

the whole case shall be submitted to a special meeting of the Society.

(4) If two-thirds of the members at this special meeting (providing there be not less than twenty persons) vote for expulsion, the Chairman of the meeting shall cause the accused to be expelled from the Society, and direct the Secretary to notify the accused of this action.

ARTICLE IV.

Officers

- 1. The officers of the Society shall consist of a President, Past Presidents, twelve Vice-Presidents, twenty-four Members of Council, and a Secretary and Treasurer.
- 2. Both Members and Associates are eligible for the offices of President, Vice-President and Members of Council, but three-fourths of the Council shall be Members.
- 3. Prior to the date of the annual meeting of the Society of the year with which the term of the President expires, the Council shall nominate a candidate for the office of President, whose name shall be presented to the Society for election at the annual meeting. Any other candidate whose nomination, signed by at least sixty Members and Associates, shall have been submitted to the Secretary prior to the annual meeting shall

also be presented. The candidate receiving the highest number of votes shall be the President for the ensuing three years. The first President under this rule shall be elected at the annual meeting in 1906, and his term of office shall begin January 1st, 1907. The President shall not be eligible for election as his own successor.

- 4. The term of office of the Vice-Presidents shall be six years. Prior to the annual meeting in 1906 the Executive Committee shall by lot divide the present list of Vice-Presidents into six classes, so that the term of two of their number shall expire at the end of 1906, and two others at the end of 1907, and so on to the year 1911. The Vice-Presidents to fill the vacancies occurring each year in any class shall be elected by the Council from their own membership. Retiring Vice-Presidents shall be eligible for re-election.
- 5. The term of office of the Members of Council shall be three years. Prior to the annual meeting in 1906, the Executive Committee shall by lot divide the present list of Members of Council into three classes, each class consisting, as near as may be, of six Members and two Associates. The terms of office of the three classes shall expire at the end of the years 1906, 1907 and 1908 respectively. Retiring Members and Associates shall be eligible for re-election. Prior to

September 1st of each year, the Executive Committee shall prepare voting lists to fill the places of retiring Members and Associates, Members of the Council. The list shall contain the names of at least twelve Members and at least four Associates as candidates for the vacancies. The lists shall contain the names of all retiring Members and Associates who shall not have declined reelection, and of all candidates who shall have been nominated in writing by not less than twenty members in the case of Members, and not less than twenty members and associates in the case of Associates. No nominations received by the Secretary after August 15th shall be considered. Should such nominations not be sufficient in number to fill up lists of at least twelve Members and four Associates as candidates, the Executive Committee shall add sufficient names to fill out these numbers. The voting lists shall be mailed as soon as practicable after September 1st of each year to associates receiving the highest votes shall be de-Members and Associates. Each Member may vote for not more than six Members and two Associates for the Council, and each Associate vote for not more than two Associates. ballots shall be returned by mail to the Secretary and canvassed at the annual meeting. The six members receiving the highest votes shall be declared elected Members of Council, and the two associates receiving the highest votes shall be declared elected Associates, Members of Council, for the term of three years.

- 6. A vacancy in the office of President shall be filled by ballot by the Council from the list of Vice-Presidents until the end of the year in which it occurs. At the annual meeting of that year a new President shall be elected for three years in the manner prescribed in paragraph 3. A vacancy in the office of Members of Council shall be filled by the Council for the unexpired portion of the term of the Member or Associate causing the vacancy.
- 7. The Presidents, Past Presidents and Vice-Presidents shall be ex-officio members of Council.
- 8. The Council may hold meetings subject to the call of the President, as often as the interests of the Society may demand.
- 9. At all meetings of Council five members shall constitute a quorum.
- 10. The Secretary and Treasurer shall be elected annually by the Council, but may be removed at any time by a majority vote of the Council after due notice has been given.
- 11. The Secretary must be a member of the Society.

ARTICLE V.

Management.

- 1. (1) The President shall have general supervision over the affairs of the Society, appoint special committees, and preside at the annual general meetings. He shall be *ex-officio* member of all committees.
- (2) In the absence of the President, the Vice-Presidents, in the order of seniority, shall preside and perform all the duties of the President.
- 2. The direct management of the Society shall be vested in an Executive Committee composed of five members of Council, elected annually by the Council, the President and Secretary of the Society being ex-officio members of the Committee. At least three of the five elective members of the Committee shall be Members of the Society.
- 3. The Executive Committee shall manage the affairs of the Society in conformity with the laws under which it is incorporated and the provisions of this Constitution. It shall direct the investment and care of the funds of the Society; make appropriations for specific purposes; arrange for the reading and publication of professional papers under such regulations as the Council may from time to time prescribe; take measures to advance

the interests of the Society, and generally direct its affairs.

- 4. The Executive Committee shall make an annual report to the Society, transmitting the report of the Secretary and Treasurer, and of any special committee which may have been ordered.
- 5. (1) The Secretary shall be the Executive Officer of the Society under the immediate direction of the President and the Executive Committee.
- (2) He shall prepare the business for the annual meetings and record the proceedings thereof.
- (3) He shall be responsible for all expenditures and certify the accuracy of all bills or vouchers upon which money has been paid, and he shall conduct the correspondence of the Society and keep full records of the same.
- 6. The Treasurer shall see that all money due the Society is collected and carefully invested in such manner as the Executive Committee may direct. If considered advisable by the Council, the duties of Treasurer may be performed by the Secretary.
- 7. The accounts of the Secretary and Treasurer shall be audited annually by a special committee of three members of Council, appointed by the President of the Society.

ARTICLE VI.

Meetings.

- 1. There shall be at least one annual general meeting of the Society for the reading and discussion of professional papers, election of officers for the ensuing year, and transaction of such other business as may be brought before it. The time and location of this meeting shall be determined by the Council at least three months prior to the date fixed.
- 2. Special meetings may be called by the Executive Committee at the request of twenty members, which request shall state the purpose of the meeting. The call for such meetings shall be issued ten days in advance, and shall state the purpose thereof. At these meetings thirty members shall constitute a quorum.
- 3. The Society may adopt, from time to time, such rules as it may think proper for the order of business at its meetings.
- 4. Special meetings of the Executive Committee may be held at any time, subject to the call of the Chairman; and four members shall constitute a quorum for the transaction of any business that may be properly brought before the Committee.

ARTICLE VII.

Amendments.

I. Proposed amendments to the Constitution must be reduced to writing and signed by not less than ten members. They shall be forwarded to the Secretary at least ten days before the annual general meeting, and shall be immediately forwarded to the Council for its consideration. If a majority of the Council approve the proposed amendment it shall be presented to the Society at the next ensuing general meeting for discussion; if approved by two-thirds of the members present, voting by ballot, if a ballot be demanded, it shall be adopted.

Soicety of Naval Architects and Marine Engineers *FORM OF PROPOSAL OF MEMBER

Name in full.....

Date of Birth
Nationality
Post-Office Address
Date of Application
Professional position now
held, giving name andaddress of institution,
address of institution,
firm or shipyard.
Brief statement of
technical train-
ing and profes-
sional experi-
- I
ence, strict
attention being \
paid to the by-
laws governing
applications for
membership.
[See Constitution.]
I certify that the above statements are correct, and, if
elected, pledge myself to abide by the constitution and by-
laws as at present in force or hereafter established, and, in the event of my ceasing to be a member, that I will
return for cancellation my certificate of membership in
the above society.
Signature of applicant
100
Having examined the above statement, we, the un- dersigned, signify our approval thereof and recommend
Mrfor election as a Member.
Mir iot election as a Member.
Signature of three
members.
*Same form for Associates and Juniors, except that
the approval of only two members are required for Asso-
ciates, and not any for Juniors.

.

TRANSACTIONS

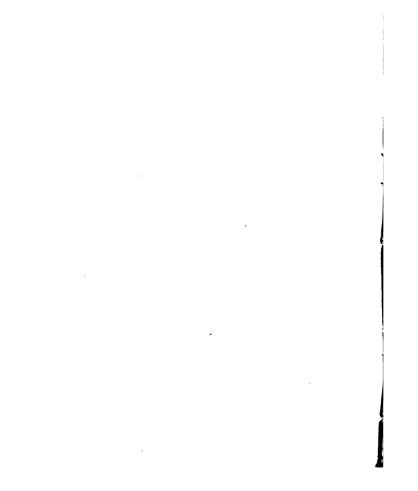
OF THE

SOCIETY OF ...

Naval Architects and

Marine Engineers

TABLE OF CONTENTS OF VOLUMES I TO XIV



VOLUME I.

288 Pages. 60 Plates and Drawings.

PAPERS.

- "Evolution of the Atlantic Greyhound."
 Chas. H. Cramp, Esq., Pres., Wm. Cramp & Sons' Ship and Engine Building Co.
- "Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements."
 JOSEPH J. WOODWARD, Naval Constr., U. S. N.
- 3. "United States Treasury Rules for the Inspection of Machinery and Boilers."

 JAMES T. BOYD, Esq.
- "Production in the United States of Heavy Steel Engine, Gun and Armor Forgings." RUSSELL W. DAVENPORT, Esq.
- 5. "Coal Bunkers and Coaling Ship."

 ALBERT P. NIBLACK, Lieutenant, U. S. N.
- "Steel Ships of the United States Navy."
 Theodore D. Wilson, Ex-Chief Constructor,
 U. S. N.
- "Notes on the Machinery of the New Vessels
 of the United States Navy."
 GEORGE W. MELVILLE, Engineer-in-Chief, U. S. N.

8. "Comparative Performances of American and Foreign Freighting Ships—Our Superiority."

WM. W. BATES, Esq., late Commissioner of Navigation.

- "Some Thoughts on the Design of New York Ferry Boats."
 Col. Edwin A. Stevens, President, Hoboken Ferries.
- "The Law of Frictional Resistance."
 Prop. W. F. Durand, Cornell University.
- "Steam Yachts as Naval Auxiliaries in Time of War."
 WM. GARDNER, Esq.
- 12. "The Wetted Surface of Ships."

 DAVID W. TAYLOR, Naval Constructor, U. S. N.
- 13. "The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels."
 IAMES O'NEILL. ESG.
- 14. "The Development of Shipbuilding on the Great Lakes."

JNO. F. PANKHURST, Esq.

VOLUME II.

346 Pages. 69 Plates and Drawings.

PAPERS.

- "Some Suggestions of Professional Experience in Connection with the Naval Construction of the Last Ten Years—1884-1894."
 RICHARD W. MEADE, Rear Admiral, U. S. N.
- "The Use of Small Models for the Determination of Curves of Stability."
 Mon. E. Bertin, Director of the French Government School of Naval Design.
- 3. "Some Obstacles to Shipbuilding and Owning in this Country."

GEO. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco, Cal.

- 4. "Electricity on Shipboard—Its Present Position and Future Development."
 S. Dana Greene, Esq.
- "Cellulose and Its Application to Warships."
 Mon. E. Cheneau, Philadelphia, Pa.
- "The U. S. Triple-Screw Cruisers 'Columbia' and 'Minneapolis'."
 George W. Melville, Engineer-in-Chief, U. S. N.
- "A Dynamic Steam Engine Indicator Tester."
 Professor Cecil H. Peabody, and Asst. Professor
 E. F. Miller, Massachusetts Institute of Technology.

- 8. "Experience Gained with our New Steel
 Ships as Regards Care and Preservation."
 PHILIP HICHBORN, Chief Constructor, U. S. N.
- "Present Status of Face-Haidened Armor."
 W. T. Sampson, Captain and Chief of Ordnance,
 U. S. N.
- 10. "Hydraulic Power for Warships." ALBERT W. STAHL, Naval Constructor, U. S. N.
- "Notes on Launching."
 WILLIAM J. BAXTER, Naval Constructor, U. S. N.
- "Yachts in England and America."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- "Accessibility and Circulation of Water-Tube Boilers."
 - L. D. Davis, Esq., M. E. President Davis-Farrar Co.
- 14 "Recent Light-draught Gunboats of U. S. N."
 J. J. WOODWARD, Naval Constructor, U. S. N.
- 15. "An Approximate Formula for the Wetted Surface of Ships."
 - Profs. W. F. DURAND and Geo. R. McDermott, Cornell University.

VOLUME III.

300 Pages. 57 Plates and Drawings.

PAPERS.

 "American Maritime Development."
 CAPT. HENRY C. TAYLOR, U. S. N., President, Naval War College.

- "The Centreboard—Its Influence on Design; Its Value and Proper Use."
 WM. P. STEPHENS, Esq.
- 3. "Rudder Experiments—U. S. S. 'Monterey'."

 ELLIOTT SNOW, Asst. Naval Constructor, U. S. N.
- "Aluminum—Its Alloys and Their Use in Ship Construction."
 I. C. McGuire, Esq., C. E.
- "Methods and Forms for Certain Ship Calculations."
 D. W. TAYLOR, Naval Constructor, U. S. N.
- "The Number of Longitudinal Intervals in Ship Computation, as Affecting the Accuracy of Integration for Displacement," and True Wetted Surface."
 Prof. W. F. DURAND, Cornell University.
- "Recent Designs for Vessels for the U. S. Navy."
 - PHILIP HICHBORN, Chief Constructor, U. S. N.
- 8. "Tactical Considerations Involved in War Ship Design."
 - ALBERT P. NIBLACK, Lieutenant, U. S. N.
- "Engineering Research in the Navy."
 Prof. Wm. S. Aldrich, University of West Virginia.
- 10. "Performance of the Twin-Screw Steamer 'City of Lowell.'"
 - Prof. James E. Denton, Stevens Institute of Technology.

- II. "The Ventilation of Ships."
 F. B. Dowst, Esq., M. E.
- "An Experimental Test of the Armored Side of the U. S. S. 'Iowa.'"
 ALBERT W. STAHL, Naval Constructor, U. S. N.

VOLUME IV.

209 Pages. 58 Plates and Drawings.

PAPERS.

- "Test of an Experimental Turret of the U. S. Battleship 'Massachusetts.'"
 Commodore W. T. Sampson, U. S. N., Chief of Bureau of Ordnance, Navy Department, Washington, D. C.
- 2. "Steel Canal Boats."

 Lewis Nixon, Manager, Crescent Shipyard,
 Elizabeth, N. J.
- "Naval Practice in Ship Rivets and Riveting."
 Naval Constructor J. H. LINNARD, U. S. N.
- 4. "American Fire-Boats."
 H. DeB. Parsons, Marine Engineer.
- "Corn-Pith Cellulose."
 HENRY W. CRAMP, Vice-President, Wm. Cramp
 & Sons, Philadelphia, Pa.
- 6. "The New Battle-Ships."

 Chief Constructor Philip Hichborn, U. S. N.

- "Speed Trials of a Screw-Propelled Ferry-Boat."
 - F. L. DuBosque, Engineer, Floating Equipment, Pennsylvania Railroad.
- 8. "Hydraulic Sheers for Lifting One Hundred and Twenty-Five Tons."

FRANK B. KING, Marine Engineer and Naval Architect.

 "A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability."

Hugo Hammar, Naval Architect.

- "Stability of a Ship in Damaged Condition."
 Prof. James Swan, Massachusetts Institute of Technology.
- "Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battle-Ships."

Assistant Naval Constructor T. F. RUHM, U.S.N.

12. "Screw Propellers."

Prof. GEO. R. McDermott, Cornell University.

VOLUME V.

247 Pages. 67 Plates and Drawings.

PAPERS.

 "Water-Tight Bulkhead Doors — the 'Long Arm' System on the U. S. S. 'Chicago.'"
 WM. BARNUM COWLES, Esq.

- "Regulations for Loading Vessels."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- "Torpedo Boat Design."
 Asst. Naval Constructor, H. G. GILLMOR, U.S.N.
- 4. "The Commerce of the Great Lakes."
 C. E. Wheeler, Esq.
- 5. "Progressive Trials of the 'Guardian.'"
 Prof. C. H. Peabldy, Mass. Institute Technology.
- "An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers." Preliminary paper. Prof. W. F. Durand, Cornell University.
- "Some Notes on the Speed Trials and Experience in Commission of our New Battleships."
 Chief Constructor Philip Hichborn, U. S. N.
- "Use of Water Ballast for Colliers in the Pacific Coast Trade."
 Hugo P. Frear, Esq., Naval Architect.
- 9. "Estimated Weights of Machinery."
 Prof. Geo. R. McDermort, Cornell University.
- 10. "Navy Yard Expenses." Naval Constructor W. J. BAXTER, U. S. N.
- "Pneumatic Steering Gear—as Applied to the U. S. Monitor 'Terror.'"
 H. A. SPILLER, Esq.

VOLUME VI.

217 Pages. 120 Plates and Drawings.

PAPERS.

- I. "The Standard Navy Boats."

 ARTHUR B. CASSIDY, Esq.
- "Bilge Keels and Rolling Experiments— U. S. S. 'Oregon.'"
 Asst. Naval Constructor LAWRENCE SPEAR,
 U. S. N.
- "Portable Pneumatic Riveters in Shipbuilding."
 W. I. ΒΑΒΟΟΟΚ, Esq., Manager, Chicago Shipbuilding Co.
- "Torpedo Boat Destroyers for Sea Service, with Special Reference to the Conditions that Prevail on the Pacific Coast."
 - G. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco.

Topical Discussion-

The Utility of Torpedo Boats, and has the Sub-Marine Boat a Place?

- 5. "Steam Economy Test of a Unique Form of Feed Pump."
 - F. M. WHEELER, Esq.
- "The Steam Yacht as a Naval Auxiliary." WILLIAM P. STEPHENS, Esq.

- "Designs of the New Vessels for the U. S. Navy."
 Chief Constructor Philip Hichborn, U. S. N.
- 8. "Methods of Securing Water-Tight Work."
 Asst. Naval Constructor H. G. Smith, U. S. N.
- "Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms." Naval Constructor J. J. WOODWARD, U. S. N.
- io. "An Electrically Operated 150-Ton Revolving Derrick."
 WALTER A. Post, Esq., Manager, Newport News Shipbuilding and Dry Dock Co.
- II. "Stability of a Battleship under Damaged Conditions."

 Topical Discussion—
 - Prof. Cecil H. Peabody, Massachusetts Institute of Technology.
- Ist.—Under the circumstances of a blockade at Santiago, which was the more economical method of maintaining the boilers in readiness for immediate action banking the fires or keeping them spread but very thin?
- 2d.—As a result of experience on the blockade, what particular points about the machinery were most likely to give trouble, and what could be done to prevent a recurrence of such trouble?

VOLUME VII.

285 Pages. 105 Plates and Drawings.

PAPERS.

- I. "Coaling Vessels at Sea."

 Spencer Miller, Esq.
- 2. "Causes for the Adoption of Water-Tube Boilers in the U. S. Navy." Engineer-in-Chief Geo. W. Melville, U. S. N.
- "Suggestions as to Improved Appliances for Launching Ships' Boats."
 JOHN HYSLOP, Esq.
- "The Electric Plants of the Battleships 'Kear-sarge' and 'Kentucky'."
 Naval Constructor J. J. WOODWARD, U. S. N.
- "The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted."
 - GEO. W. DICKIE, Esq., Manager, Union Iron Works.
- "Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results." H. F. Norton, Esq.
- "Notes on the Sheathing of the U. S. S. Chesapeake."
 Naval Constructor LLOYD BANKSON, U. S. N.
- 8. "System of Work in a Great Lake Shipyard." W. I. Вавсоск, Esq., Manager, Chicago Shipbuilding Co.

- "Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard."
 JAMES DICKIE, Esq., Superintendent, Union Iron Works.
- 10. "Designs for the Denver Class Sheathed Protected Cruisers."

 Chief Constructor Philip Hichborn, U. S. N.
- II. "Novelties in Ship Fittings."

 Asst. Naval Constructor R. M. Watt, U. S. N.
- 12. "Progressive Speed Trials of the U. S. S. Manning."
 - Prof. C. H. Peabody, Massachusetts Institute Technology.
- "Tactical Considerations Involved in Torpedo-Boat Design."
 Lieut, A. P. Niblack, U. S. N.
- 14. "On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over." Prof. Wm. F. Durand, Sibley College, Cornell

Prof. Wm. F. Durand, Sibley College, Cornell University.

VOLUME VIII.

275 Pages. 151 Plates and Drawings.

PAPERS.

I. "Capacity Test of a Unique Form of Air Pump."

F. MERIAM WHEELER, Esq.

- "Interchangeability of Units for Marine Work."
 W. D. Forbes, Esq.
- "The Performance of the Imperial Russian Cruiser Variag."

CHAS. H. CRAMP, Esq., Pres. Wm. Cramp & Sons, Ship and Engine Building Co., Philadelphia, Pa.

4. "The United States Experimental Model Basin."

Naval Constructor D. W. TAYLOR, U. S. N.

- The Composition and Classification of Paints and Varnishes."
 Prof. A. H. Sabin.
- "Tests of the Electric Plants of the Battleships Kearsarge and Kentucky." Naval Constructor J. J. WOODWARD, U. S. N.
- "Coaling of the U. S. S. Massachusetts at Sea."
 SPENCER MILLER. ESD.
- "Notes on Recent Improvements in Foreign Shipbuilding Plants."
 Asst. Naval Constructor H. G. GILLMOR. U.S.N.
- 9. "Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the Production of the Largest Class of Ocean Passenger and Freight Steamships?

GEO. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco.

- 10. "Classification Rules."
 THEODORE LUCAS, Esq.
- II. "Recent Designs of Battleships and Cruisers of the U. S. N." Chief Constructor Philip Hichborn, U. S. N.
- 12. "A Comparison of the Contract Prices of our Naval Vessels." HARRISON S. TAFT, Esq.
- 13. "Launch of a Cruiser and a Battleship."

 JAMES DICKIE, Esq., Supt., Union Iron Works,
 San Francisco.
- 14. "Safety of Torpedo Boats at Sea and in Action Under Various Conditions." Naval Constructor LLOYD PANKSON, U. S. N.

VOLUME IX.

251 Pages. 58 Plates and Drawings.

PAPERS.

- I. "Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo.'"

 FRANK E. KIRBY, Esq.
- "Effect of Variation of Dimensions on the Stresses in a Ship's Structure." Professor H. C. SADLER, Esq.
- "Power Consumed in Propelling the Whitehead Torpedo at Various Speeds."
 FRANK M. LEAVITT, Esq.

4. "The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)

Naval Constructor D. W. TAYLOR, U. S. N.

 "The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
 Rear Admiral George W. Melville. U. S. N.

"A Brief Comparison of Recent Battleship Designs."

Naval Constructor H. G. GILLMOR, U. S. N.

- "Changes in Torpedo Boat Designs."
 CHARLES P. WETHERBEE, Esq.
- 8. "Late Developments in Armor and Ordnance."

J. F. MEIGS, Esq.

- "Recent Experiments in Attacking Armor with High Explosive Shells."
 Captain E. B. Babbitt, Ordnance Dept., U. S. A.
- "Some Notes on Tidal Corrections."
 Messrs. E. A. Stevens, and C. P. Paulding.
- "Side Launch of Torpedo Boats and Torpedo Boat Destroyers."

Asst. Naval Constructor Wm. G. Groesbeck, U. S. N.

SANCELLED

VOLUME X.

377 Pages. 108 Plates and Drawings.

PAPERS.

- "Technical Training for Shipbuilders." HENRY S. PRITCHETT, Ph.D., LL.D.
- "Progressive Trials of the Screw Ferry Boat 'Edgewater.'"
 EDWIN A. STEVENS. and CHARLES P. PAULDING.
- 3. "The Possible and Probable Future Developments in the Use of Electricity on Board Ships."

 F. O. BLACKWELL, Esq.
- "The Preliminary Official Trial of the U. S. B. S. 'Maine.'"
 Asst. Naval Constructor J. W. Powell, U. S. N.
- "The Water-tube Boiler in the American Mercantile Marine."
 WM. A. FAIRRURN, Esq.
- 6. "Longitudinal Bending Stress on Damaged Ships."

 GEORGE C. COOK, Esq.
- "Some Problems on the Surfaces of Buoyancy and of Waterlines." Professor Cecil H. Peabody.

 "Vibration of Steamships; with Special Reference to those of the 2d and Higher Periods."

Rear-Admiral George W. Melville, Engineer-in-Chief, U. S. N.

"The Development of Modern Ordnance and Armor in the United States."

Rear-Admiral CHARLES O'NEIL, Chief of the Bureau of Ordnance, U. S. N.

10. "Remarks on the New Designs for Naval Vessels."

Rear-Admiral Francis T. Bowles, Chief Constructor, U. S. N.

- II. "The Tactics of the Gun."

 Lieut.-Commander Albert P. Niblack, U. S. N.
- 12. "Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States."

GEORGE W. DICKIE, Esq.

13. "Submarine Torpedo Boats; Past, Present and Future."

LAWRENCE Y. SPEAR, Esq.

- "Measurement Rules for Yachts, with Special Reference to Racing Conditions."

 F. W. BRLENAP, Esq.
 - 15. "The Balancing of Valve Gears." (Prize Competition Paper.)
 LUTHER D. LOVEKIN, Esq.

VOLUME XI.

353 Pages. 148 Plates and Drawings.

PAPERS.

- 1. "Progressive Trial of Ferry Boat 'Bremen.'"

 EDWIN A. STEVENS, Esq.
- "Notes on the Arrangements and Construction of Steam Pipes and their Connections."
 R. C. MONTEAGLE, Esq.
- 3. "Gasoline Engines for Marine Propulsion."
 D. H. Cox, Esq.
- 4. "Some Thoughts on the Design of Modern Steam Yachts."

 CLINTON H. CRANE. Esq.
- 5. "Watertight Subdivision of Warships."

 Commander Wm. Hovgaard, Royal Danish Navy.
- "Non-corrosive Nickel Steel Boiler Tubes." ALBERT LADD COLBY, Esq.
- "Curves of Form of the Initial Condition." GEORGE C. COOK, Esq.
- "The Metric System in Relation to the Shipbuilding Industry in the United States." Naval Constructor J. H. Linnard, U. S. N.
- "Electricity in Manufacturing Plants."
 W. M. McFarland, Esq.
- 10. "Description of the Design and Building of the 21,000-ton Steamships 'Minnesota' and 'Dakota.'"

CHARLES R. HANSCOM, Esq.

- "Ships' Forms Derived by Formulæ."
 Naval Constructor D. W. TAYLOR, Esq.
- 12. "Displacement and Stability Calculations."
 WALTER S. LELAND, Esq.
- 13. "Graphic Calculations of a Ship's Stability."

 Professor M. H. BAUER.
- 14. "Notes on the Launching of the Cruiser 'Chattanooga.'"

 M. S. CHACE, Esq.
- 15. "Notes on Side Launchings."

 Asst. Naval Constructor WM. G. GROESBECK,
 U. S. N.
- "Launching of Large Merchant Vessels."
 WM. A. FAIRBURN, Esq.
- 17. "Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea."

 Lieut. L. H. CHANDLER, U. S. N.

VOLUME XII.

362 Pages. 115 Plates and Drawings.

PAPERS.

- "Simple Methods in Warship Designs a Necessity."
 George W. Dickie, Esq.
- 2. "The Semi-Globular Naval Battery."
 Anson Phelps Stokes, Esq.

- 3. "The Seagoing Battleship."

 Commander William Hovgaard, Royal Danish
 Navy.
- "Some Recent Experiments at the United States Model Basin." Naval Constructor D. W. TAYLOR, U. S. N.
- "Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea."
 Lieutenant L. H. CHANDLER, Esq.
- "The U. S. Armored Cruiser 'Colorado.'"
 Asst. Naval Constructor J. W. Powell, U. S. N.
- "Coaling Warships at Sea—Recent Developments."
 SPENCER MILLER, Esq.
- "Time Allowance for Steam Yacht Races." Rear-Admiral George W. Melville, Ex-Engineer-in-Chief, U. S. N.
- 9. "On the Rules of Lloyd's Register for Building Yachts to Class."

 GEORGE STANBURY, Esq.
- 10. "The Position of the Center of Lateral Resistance."

 Mons. L. E. Bertin.
- "Subdivision of Weights in Ships' Displacement."
 Colonel Nabor Solani.

"The Shipping and Shipbuilding of Puget Sound."

FRANK W. HIBBS, Esq.

"Maintenance of Machinery in Merchant 13. Ships." ROBERT HAIG, Esq.

- "Uniform Specifications." I4. W. D. FORBES, Esq.
- "High-Speed Gesoline Launches." 15. CLINTON H. CRANE, Esq.
- "Speed and Power of Recent Motor Boats." 16. ALPHEUS A. PACKARD, Esq.
- 17. "Recent Launching Practice of the Atlantic Coast." Asst. Naval Constructor R. H. M. Robinson,

U. S. N.

"Recent Launching Practice of the Pacific 18. Coast."

EVERETT P. LESLEY, Esq.

VOLUME XIII.

304 Pages. 201 Plates and Drawings.

PAPERS.

1. "Some Problems in Ferry Boat Propulsion." Colonel EDWIN A. STEVENS, Vice-President.

"Experiments With Ventilating Fans and Pipes."

Naval Constructor D. W. TAYLOR, U. S. N., Member of Council.

- "Experimental Researches on the Performance of Screw Propellers."
 Professor Wm. F. Durand, Member of Council.
- "Some Results of Tests of Model Propellers."
 A. V. Curris, and L. F. Hewins, Juniors.
- "The Cruiser."
 Commander Wm. Hovgaard, Royal Danish Navy, Member.
- "A Comparison of Recent Battleships."
 Naval Constructor H. G. GILLMOR, U. S. N., member.
- "THE ULTIMA," a Globular Naval Battery."
 ANSON PHELPS STOKES. ASSOCIATE.
- 8. "A Note from Japan."

 George W. Dickie, Member of Council.
- "Longitudinal Bending Moments of Certain Lake Steamers."
 W. I. BABCOCK, Member of Council.
- "Some Notes on Steam Boiler Troubles."
 HORACE SEE, Member of Council.
- "Notes on the Strength of Water-tight Bulkheads for Battleships an dCruisers."
 HAROLD F. NORTON, Associate.

12. "Marine Applications of the Curtis Steam Turbine."

CURTIS, CHARLES G., Member.

 "Marine Steam Turbine Development and Design."
 E. M. SPEARMAN, Associate.

 "Methods of Conducting Speed Trials."
 Naval Constructor J. J. Woodward, U. S. N., Member.

 "How a Ninety-footer Behaves in an Ocean Race."
 PAUL EVE STEVENSON, Associate.

16. "Problems in Connection with High Speed Launches."
CLINTON H. CRANE, Associate.

17. "Progressive Speed Trials of the Gasoline Launch 'LUDO.'"
GEORGE CROUSE COOK, Member.

"Scantling Regulations in Yachting."
 W. P. Stephens, Associate.

VOLUME XIV.

Pages. Plates and Drawings.

PAPERS.

"A Fireproof Ferryboat."
 L. DuBosque, Member.

"Construction of a Fireproof Excursion Steamer."

WILLIAM GATEWOOD, Member.

"Performance of the Paddle-Wheel Steamboat 'New York' of the Hudson River Day Line."

Professor J. E. Denton, Member of Council.

4. "Personal Impressions of Model Towing Stations Abroad."

Professor C. H. PEABODY, Member of Council.

- "The Experimental Tank of the University of Michigan." Professor H. C. SADLER, Member.
- "Model Basin Gleanings."
 Naval Constructor D. W. TAYLOR, U. S. N., Vice-President.
- 71/2. "The Limit of Propeller Efficiency."
 WILLIAM MCENTER, U. S. N., Associate.
- "A Comparison of Durand's and Curtis & Hewins Papers on Propeller Experiments of 1905."
 Colonel E. A. STEVENS. Vice-President.
- 8. "A Modern Fleet."

 Captain E. B. BARRY, U. S. N., Associate.
- "Recent Developments in Armor and Armament."

JOHN F. MRIGS, Associate.

10. "Notes on the Development of War Ship Design."

Naval Constructor R. H. Robinson, U. S. N., Member.

- II. "The Development of Submarines."

 LAWRENCE Y. SPEAR, Member.
- "The Effect of the Universal Rule in Recent Yachts."
 MARTIN C. ERISMANN, Junior.
- 13. "Explosive Engines for Naval Purposes."
 ARTHUR T. CHESTER. Associate.
- "Two Timber Dry Docks and Their Pumping Plant."
 F. P. Palen, and G. L. Smith, Members.
- 15. "A New Sea Anchor for Coaling at Sea."

 Spencer Miller, Member.

AUTHOR'S NAMES AND PAPERS.

ALDRICH, WM. S.

"Engineering Research in the Navy." Vol. 3.

BABBITT, E. B.

"Recent Experiments in Attacking Armor with High Explosive Shells." Vol. 9.

BABCOCK, W. I.

"Portable Pneumatic Riveters in Shipbuilding." Vol. 6.

"System of Work in a Great Lake Shipyard." Vol. 7.

"Notes on the Sheathing." Vol. 7.

"Longitudinal Bending Moments of Certain Lake Steamers." Vol. 13.

BANKSON, LLOYD.

"Safety of Torpedo Boats at Sea and in Action Under Various Conditions." Vol. 8.

BATES, WM. W.

"Comparative Performance of American and Foreign Freighting Ships-Our Superiority." Vol. 1.

BAUER, M. H.

"Graphic Calculations of a Ship's Stability."

BARRY, E. B.

"A Modern Fleet." Vol. 14.

BAXTER, WILLIAM J.

"Notes on Launching." Vol. 2.

"Navy Yard Expenses." Vol. 5.

BELKNAP, F. W.

"Measurement Rules for Yachts, with Special Reference to Racing Conditions." Vol. 10.

BERTIN, L. E.

"The Use of Small Models for the Determination of Culves of Stability," Vol. 2.

"The Position of the Center of Lateral Resistance."
Vol. 12.

BLACKWELL, F. O.

"The Possible and Probable Future Development in the Use of Electricity on Board Ships." Vol. 10.

Bowles, Francis T.

"Remarks on the New Designs for Naval Vessels."
Vol. 10.

BOYD, JAMES T.

"United States Treasury Rules for the Inspection of Machinery and Boilers." Vol. 1.

CASSIDY, ARTHUR B.

"The Standard Navy Boats." Vol. 6.

CHANDLER, L. H.

"Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea." Vol. 11.

"Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea." Vol. 12.

CHACE, M. S.

"Notes on the Launching of the Cruiser 'Chattanooga'." Vol. 11.

CHENEAU, E.

"Cellulose and Its Application to Warships."
Vol. 2.

CHESTER, A. T.

"Explosive Engines for Naval Purposes." Vol. 14.

COLBY, ALBERT LADD

"Non-Corrosive Nickel Steel Boiler Tubes."
Vol. 11.

COOK, GEORGE C.

"Longitudinal Bending Stress on Damaged Ships."
Vol. 10.

"Curves of Form of the Initial Condition." Vol. 11. "Progressive Speed Trials of the Gasoline Launch 'LUDO'." Vol. 13.

COWLES, WM. BARNUM

"Water-Tight Bulkhead Doors — the 'Long Arm' System on the U. S. S. 'Chicago'." Vol. 5.

Cox, D. H.

"Gasoline Engines for Marine Propulsion."
Vol. 11.

CRAMP, CHAS, H.

"Evolution of the Atlantic Greyhound." Vol. 1. "The Performance of the Imperial Russian Cruiser 'Variag'." Vol. 8.

CRAMP, HENRY W.

"Corn-Pith Cellulose." Vol. 4.

CRANE, CLINTON H.

"Some Thoughts on the Design of Modern Steam Yachts." Vol. 11.

"High Speed Gasoline Launches." Vol. 12.

"Problems in Connection with High Speed Launches." Vol. 13.

CURTIS, CHARLES G.

"Marine Applications of the Curtis Steam Turbine."

CURTIS, A. V., AND HEWINS, L. F.

"Some Results of Tests of Model Propellers."
Vol. 13.

DAVENPORT, RUSSELL W.

"Production in the United States of Heavy Steel Engine, Gun and Armor Forgings." Vol. 1.

DAVIS, L. D.

. 6

n

"Accessibility and Circulation of Water - Tube Boilers." Vol. 2.

DENTON, JAMES E.

"Performance of the Twin-Screw Steamer 'City of Lowell'." Vol. 3.

"Performance of the Paddle Wheel Steamboat 'New York' of the Hudson River Day Line." Vol. 14.

DICKIE, JAMES

"Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard." Vol. 7.

"Launch of a Cruiser and a Battleship." Vol. 8.

DICKIE, GEO. W.

- "Some Obstacles to Shipbuilding and Owning in this Country." Vol. 2.
- "Torpedo Boat Destroyers for Sea Service, with Special Reference to the Conditions that Prevail on the Pacific Coast." Vol. 6.
- "The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted." Vol. 7.
- "Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the production of the Largest Class of Ocean Passenger and Freight ! teamships?" Vol. 8.
- "Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States." Vol. 10.
- "Simple Methods in Warship Designs a Necessity." Vol. 12.
- "A Tale from Japan." Vol. 13.

Dowst. F. B.

"The Ventilation of Ships." Vol. 3.

DuBosque, F. L.

- "Speed Trials of a Screw-Propelled Ferry-Boat."
 Vol. 4.
- "A Fireproof Ferryboat." Vol. 14.

DURAND, W. F., AND McDermott, Geo. R.

"An Approximate Formula for the Wetted Surface of Ships." Vol. 2.

DURAND, W. F.

"The Law of Frictional Resistance." Vol. 1.

"The Number of Longitudinal Intervals in Ship Competition, as Affecting the Accuracy of Integration for Displacement," and "Note on the Relation between Reduced and True Wetted Surface." Vol. 3.

"An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers." Preliminary Paper. Vol. 5.

"On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over." Vol. 7.

"Experimental Researches on the Performance of Screw Propellers." Vol. 13.

ERISMANN, MARTIN C.

"The Effect of the Universal Rule in Recent Yachts." Vol. 1.

FAIRBURN, WM. A.

"The Water-tube Boiler in the American Mercantile Marine." Vol. 10.

"Launching of Large Merchant Vessels." Vol. 11.

FORBES, W. D.

"Interchangeability of Units for Marine Work."
Vol. 8.

"Uniform Specifications." Vol. 12.

FREAR, HUGO P.

"Use of Water Ballast for Colliers in the Pacific Coast Trade." Vol. 5.

GARDNER, WM.

"Steam Yachts as Naval Auxiliaries in Time of War." Vol. 1.

GATEWOOD, WILLIAM

"Construction of a Fireproof Steamer." Vol. 14.

GILLMOR, H. G.

"Torpedo Boat Design." Vol. 5.

"Notes on Recent Improvements in Foreign Shipbuilding Plants." Vol. 8.

"A Brief Comparison of Recent Battleship Designs." Vol. 9.

"A Comparison of Recent Battleships." Vol. 13.

GREENE, S. DANA

"Electricity on Shipboard — Its Present Position and Future Development." Vol. 2.

GROESBECK, WM. G.

"Side Launch of Torpedo Boats and Torpedo Boat Destroyers." Vol. 9.

"Notes on Side Launchings." Vol. 11.

HAIG, ROBERT

"Maintenance of Machinery in Merchant Ships."
Vol. 12.

HAMMER, HUGO

"A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability." Vol. 4.

HANSCOM, CHARLES R.

"Description of the Design and Building of the 21,000-ton Steamships 'Minnesota' and 'Dakota'."
Vol. 11.

HIBBS, FRANK W.

"The Shipping and Shipbuilding of Puget Sound." Vol. 12.

HICHBORN, PHILIP

"Experience Gained with our New Steel Ships as Regards Care and Preservation." Vol. 2.

"Recent Designs for Vessels for the U. S. Navy."
Vol. 3.

"The New Battleships." Vol. 4.

"Some Notes on the Speed Trials and Experience in Commission of our New Battleships." Vol. 5.

"Designs of the New Vessels for the U. S. Navy."
Vol. 6.

"Designs for the 'Denver' Class Sheathed Pro-

tected Cruisers." Vol. 7.
"Recent Designs of Battleships and Cruisers of the U. S. N." Vol. 8.

HOVGAARD, WM.

"Watertight Subdivision of Warships." Vol. 11. "The Seagoing Battleship." Vol. 12.

"The Cruiser." Vol. 13.

Hyslop, John

"Suggestions as to Improved Appliances for Launching Ships' Boats." Vol. 7.

KING. FRANK B.

"Hydraulic Sheers for Lifting One Hundred and Twenty-five Tons," Vol.

KIRBY, FRANK E.

"Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo'." Vol. 9.

LEAVITT, FRANK M.

"Power Consumed in Propelling the Whitehead Torpedo at Various Speeds." Vol. 9.

LELAND, WALTER S.

"Displacement and Stability Calculations." Vol. 11.

LESLEY, EVERETT P.

"Recent Launching Practice of the Pacific Coast."
Vol. 12.

LINNARD, J. H.

"Naval Practice in Ship Rivets and Riveting."
Vol. 4.

"The Metric System in Relation to the Shipbuilding Industry in the United States." Vol. 11.

LOVEKIN. LUTHER D.

"The Balancing of Valve Gears." Prize Competition Paper." Vol. 10.

LUCAS, THEODORE

"Classification Rules." Vol. 8.

McDermoth & Durand, see Vol. 2, No. 15. "Screw Propellers." Vol. 4.

"Estimated Weights of Machinery." Vol. s.

McEntee. William

"The Limit of Propeller Efficiency." Vol. 14.

McFarland, W. M.

"Electricity in Manufacturing Plants." Vol. 11.

McGuire. T. C.

"Aluminum—Its Alloys and Their Use in Ship Construction." Vol. 3.

MEADE. RICHARD W.

"Some Suggestions of Professional Experience in Connection with the Naval Construction of the Last Ten Years—1884-1894." Vol. 2.

MEIGS, J. F.

•--

"Late Developments in Armor and Ordnance."
Vol. o.

"Recent Developments in Armor and Armament."
Vol. 14.

MELVILLE, GEORGE W.

"Notes on the Machinery of the New Vessels of the United States Navy." Vol. 1.

"The U. S. Triple-Screw Cruisers 'Columbia' and 'Minneapolis'." Vol. 2.

"Causes for the Adoption of Water-Tube Boilers in the U. S. Navy." Vol. 7.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.) Vol. 9.

"Vibration of Steamships; with Special Reference to those of the 2d and Higher Periods." Vol. 10. "Time Allowance for Steam Yacht Races." Vol. 12.

MILLER, SPENCER

"Coaling Vessels at Sea." Vol. 7.

"Coaling of the U. S. S. Massachusetts at Sea." Vol. 8.

"Coaling Warships at Sea—Recent Developments."
Vol. 12.

"A New Sea Anchor for Coaling at Sea." Vol. 14.

MONTEAGLE, R. C.

"Notes on the Arrangements and Construction of Steam Pipes and their Connections." Vol. 11.

NIBLACK, ALBERT P.

.

"Coal Bunkers and Coaling Ship." Vol. 1.

"Tactinal Considerations Involved in War Ship Design." Vol. 3.

"Tactinal Consideration Involved in Torpedo-Boat Design." Vol. 7.

"The Tactics of the Gun." Vol. 10.

NIXON, LEWIS

"Yachts in England and America." Vol. 2.

"Steel Canal Boats." Vol. 4.

"Regulations for Loading Vessels." Vol. 5.

NORTON, H. F.

"Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results." Vol. 7.

"Notes on the Strength of Water-tight Bulkheads for Battleships and Cruisers." Vol. 13.

O'NEIL, CHARLES

"The Development of Modern Ordnance and Armor in the United States." Vol. 10.

O'Neil, James

"The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels." Vol. 1.

PACKARD, ALPHEUS A.

"Speed and Power of Recent Motor Boats."

PALEN, F. P., AND G. L. SMITH

"Two Timber Dry Docks and Their Pumping Plant." Vol. 14.

Pankhurst, Jno. F.

"The Development of Shipbuilding on the Great Lakes." Vol. 1.

PARSONS, H. DEB.

"American Fire-Boats." Vol. 4.

PEABODY, C. H., AND MILLER, E. F.

"A Dynamic Steam Engine Indicator Tester."
Vol. 2.

PEABODY, C. H.

"Progressive Trials of the 'Guardian'." Vol. 5.

"Stability of a Battleship under Damaged Conditions." Vol. 6.

"Progressive Speed Trials of the U. S. S. 'Manning'." Vol. 7.

"Some Problems on the Surfaces of Buoyancy and of Waterlines." Vol. 10.

"Personal Impressions of Model Towing Stations."
Vol. 14.

Post, Walter A.

"An Electrically Operated 150-ton Revolving Derrick." Vol. 6.

POWELL, J. W.

"The Preliminary Official Trial of the U. S. B. S. 'Maine'." Vol. 10.

"The U. S. Armored Cruiser 'Colorado'." Vol. 12.

PRITCHETT, HENRY S.

"Technical Training for Shipbuilders." Vol. 10.

ROBINSON, R. H. M.

"Recent Launching Practice of the Atlantic Coast."
Vol. 12.

"Notes on the Development of War-Ship Design." Vol. 14.

RUHM, T. F.

"Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battleships." Vol. 4

SABIN, A. H.

"The Composition and Classification of Paints and Varnishes." Vol. 8.

SADLER, H. C.

"Effect of Variation of Dimensions on the Stresses in a Ship's Structure." Vol. 9.

"The Experimental Tank of the University of Michigan." Vol. 14.

SAMPSON, W. T.

"Present Status of Face-Hardened Armor." Vol. 2.
"Test of an Experimental Turret of the U. S.
Battleship 'Massachusetts'." Vol. 4.

SEE, HORACE

"Some Notes on Steam Boiler Troubles." Vol. 13.

SMITH, H. G.

"Methods of Securing Water - Tight Work."
Vol. 6.

Snow, Elliot

"Rudder Experiments — U. S. S. 'Monterey'."
Vol. 3.

SOLIANI, NABOR

"Sub-division of Weights in Ships' Displacement." Vol. 12.

SPEAKMAN, E. M.

"Marine Steam Turbine Developments and Design." Vol. 13.

SPEAR, LAWRENCE

"Bilge Keels and Rolling Experiments—U. S. S. 'Oregon'," Vol. 6.

"Submarine Torpedo Boats; Past, Present and Future." Vol. 10.

"The Development of Submarines." Vol. 14.

SPILLER, H. A.

"Pneumatic Steering Gear—as Applied to the U. S. Monitor 'Terror'." Vol. 5.

STAHL, ALBERT W.

"Hydraulic Power for Warships." Vol. 2.

"An Experimental Test of the Armored Side of the U. S. S. 'Iowa'," Vol. 3.

STANBURY, GEORGE

"On the Rules of Lloyd's Register for Building Yachts to Class." Vol. 12.

STEPHENS, WM. P.

"The Centreboard—Its Influence on Design; Its Value and Proper Use." Vol. 3.

"The Steam Yacht as a Naval Auxiliary." Vol. 6. "Scantling Regulation in Yachting." Vol. 13.

STEVENS, E. A., AND PAULDING, CHARLES P.

"Some Notes on Tidal Corrections." Vol. 9.

"Progressive Trials of the Screw Ferry Boat 'Edgewater'." Vol. 10.

STEVENS, EDWIN A.

"Some Thoughts on the Design of New York Ferry Boats." Vol. 1.

"Progressive Trial of Ferry Boat 'Bremen'."
Vol. 11.

"Some Problems in Ferry Boat Propulsion."
Vol. 13.

"A Comparison of Durand's and Curtis & Hewins' Experiments of 1905." Vol. 14.

STEVENSON, PAUL EVE

"How a Ninety-footer Behaves in an Ocean Race." Vol. 13.

STOKES, ANSON PHELPS

"The Semi-Globular Naval Battery." Vol. 12.

"'The Ultima', a Globular Naval Battery." Vol. 13.

SWAN, JAMES

"Stability of a Ship in Damaged Condition." Vol. 4.

TAFT. HARRISON S.

"A Comparison of the Contract Prices of our Naval Vessels." Vol. 8.

TAYLOR, DAVID W.

"The Wetted Surface of Ships." Vol. 1.

"Methods and Forms for Certain Ship Calculations." Vol. 3.

"The United States Experimental Model Basin." Vol. 8.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.) Vol. 9.

"Ship's Forms Derived by Formulæ." Vol. 11.

"Some Recent Experiments at the United States Model Basin." Vol. 12.

"Experiments With Ventilating Fans and Pipes."
Vol. 13.

"Model Basin Gleanings. Vol. 14.

TAYLOR, HENRY C.

"American Maritime Development." Vol. 3.

WATT, R. M.

"Novelties in Ship Fittings." Vol. 7.

WETHERBEE, CHARLES P.

"Changes in Torpedo Boat Designs." Vol. 9.

WHEELER, C. E.

"The Commerce of the Great Lakes." Vol. s.

WHEELER, F. M.

"Steam Economy Test of a Unique Form of Feed Pump." Vol. 6.

WILSON, THEODORE D.

"Steel Ships of the United States Navy." Vol. 1.

WOODWARD, JOSEPH J.

"Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements." Vol. 1.

"Recent Light-Oraught Gunboats o fthe U. S. Navy." Vol. 2.

"Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms." Vol. 6.

"The Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 7.

"Tests of the Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 8.

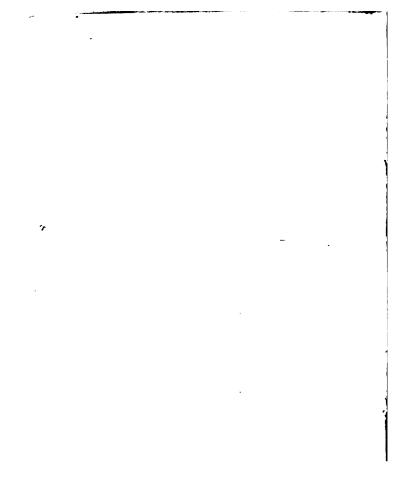
"Methods of Conducting Speed Trials." Vol. 13.

Each Volume also Contains:

List of Officers.
List of Members and Associates.
Articles of Incorporation.
Constitution and By-Laws.
Proceedings of Annual Meeting.
President's Address.
Report of Secretary and Treasurer.
Discussions on each Paper by the Leading Naval Architects and Engineers of the Country.

Cloth Binding. Size of Page, Quarto.

MEMORANDUM





366988

SOCIETY

OF

NAVAL ARCHITECTS

AND

MARINE ENGINEERS

1908



Society of

Naval Architects

AND

Marine Engineers

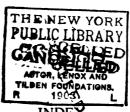
ENGINEERING SOCIETIES BLDG.
29 West Thirth-Ninth Street

NEWYORK

JANUARY 1, 1908

ROEHR PUBLISHING COMPANY

35 MYRTLE AVE., BROOKLYN



INDEX.

Officers, List of	:	 ٠.	•	٠.		3
Membership						
Honorary Members	٠.	 ٠.	•			4
" Associates		 ••	•			4
Life Members		 				4
" Associates		 ٠.				4
Members		 				5
Associates		 			•	37
Juniors		 				53
Constitution and By-Laws		 				65
TABLE OF CONTENTS, VOLUMES I. TO XV.		 				83
Authors' Names and Papers		 			. 1	

Society of Naval Architects and Marine Engineers

LIST OF OFFICERS

· President

FRANCIS T. BOWLES.

Past President and Honorary Associate Member CLEMENT A. GRISCOM.

Vice-Presidents

Term expires December 31, 1908: F. L. FERNALD. STEVENSON TAYLOR.

Term expires December 31, 1909:
MILLER. G. W. MELVILLE.

J. W. MILLER,

Term expires December 31, 1910: .
OUINTARD. C. W. RAE, G. W. QUINTARD,

Term expires December 31, 1911: CIRBY, E. A. STEVENS. F. E. KIRBY,

Term expires December 31, 1912:
D. W. TAYLOR. W. L. CAPPS,

Term expires December 31, 1913: C. H. CRAMP. R. D. Evans.

Members of Council

Term expires December 31, 1908: F. B. KING. HORACE SEE, J. E. Denton, I. N. Hollis, C. H. PEABODY. G. E. WEED. Term expires December 31, 1909:

W. J. BAXTER, W. D. FORBES, W. M. McFarland, G. W. DICKIE, ANDREW FLETCHER, LEWIS NIXON.

Term expires December 31, 1910:
W. I. BABCOCK, N. G. HERRESHOFF, J. H. LINNARD,
W. F. DURAND, F. L. DUBOSQUE, W. A. POST.

Associate Members of Council Term expires December 31, 1908: H. PUTNAM. H. D. GOULDER,

Term expires December 31, 1909: I. S. HYDE. J. R. Andrews.

Term expires December 31, 1910: W. H. Brownson, A. P. NIBLACK.

Executive Committee

FRANCIS T. BOWLES, Ex-Officio. WASHINGTON L. CAPPS, LEWIS NIXON, HARRINGTON PUTNAM, Edwin A. Stevens, STEVENSON TAYLOR, WILLIAM J. BAXTER, Ex-Officio.

Secretary-Treasurer WILLIAM J. BAXTER.

LIST OF MEMBERS

HONORARY MEMBER

WHITE, SIR WILLIAM H., K. C. B., Etc., Late Chief Constructor, British Navy, Cedarcroft, Putney Heath, S. W., London, England.

HONORARY ASSOCIATES

Brassey, Rt. Hon. Lord, K. C. B., Etc., 4 Great George St., Westminster, S. W. Griscom, Clement A., 305 Walnut St., Philadelphia, Pa.

LIFE MEMBERS

CRAMP, CHARLES H., The Wm. Cramp & Sons, Ship and Engine Building Co., 2113 Delancey St., Philadelphia, Pa. FRICK, HENRY C., Capitalist, Frick Bldg., Pittsburg, Pa. JAQUES, Wm. H., Little Boar's Head, N. H.

MANTON, FRANK S., President, American Ship Windlass Co., Providence, R. I.

QUINTARD, GEORGE W., Quintard Iron Works, foot East 12th St., New York.

STEVENS, EDWIN A., 15 William St., New York.

LIFE ASSOCIATE MEMBERS

DINKEY, ALVA C., President, Carnegie Steel Co., Pittsburg, Pa.

PUTNAM, HARRINGTON, 27 William St., New York.

QUAYLE, GEORGE L., Retired Ship Builder and Ship

Owner, 3080 Euclid Ave., Cleveland, Ohio.

VANDERBILT, CORNELIUS, 30 Pine St., New York.

MEMBERS

A

- Adams, Lawrence Stowell, Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.
- Addicks, Walter R., Vice-President, Consolidated Gas Company, 4 Irving Place, New York.
- ALI, M., Lieutenant, Imperial Ottoman Navy, Yorkshire Fire & Life Insurance Co., Galata, Constantinople, Turkey.
- Allderdice, Wm. H., Commander, U. S. N., Retired, 2162 Florida Ave., Washington, D. C.
- ALLEN, ARTHUR P., Engineer, Pacific Engineering Co., Seattle, Wash.
- ALLEN, CARLTON B., Chief Engineer, Marine Department, N. Y., N. H. & H. R. R. Co., 30 Colonial Place, New Rochelle, N. Y.
- ALLEN, REDFIELD H., 40 Avon Way, Quincy, Mass.
- ALLWORK, ROLAND, Inspecting Engineer, Panama R. R. & S. S. Line, 24 State St., New York.
- ALMY, DARWIN, President, Almy Water-tube Boiler Company, 178-184 Allen Ave., Providence, R. L.
- Anderson, Ernest H. B., Technical Representative, Parsons Marine Steam Turbine Co., 97 Cedar St., New York.
- Anderson, Martin A., Commander, U. S. N., Retired, 834 Prospect Place, Madison, Wis.
- Andrews, Jr., Thomas, Director, Harlan & Wolff, 31 Wellington Place, Belfast, Ireland.
- ANGSTROM, ARENDT, General Manager, Canadian Shipbuilding Company, Ltd., Toronto, Ontario, Canada,
- Arsenius, J. A. F., Torpedo Engineer, Royal Swedish Navy, Royal Dockyard, Stockholm, Sweden.
- ARTIS, THOMAS E., Chief Draughtsman, Bath Iron Works, Bath, Maine.

ATLEE, JOSHUA W., Naval Constructor, The Wm. Cramp & Sons' S. & E. B. Company, Philadelphia, Pa. House—Riverton, Burlington Co., N. J.

ATHOUGUIA, ANTONIO JERVIS, D', Royal Naval Engineer, Portuguese Navy, 13 Rua da Paz, Lisbon, Portugal.

AUBIN, L. C. E. M., Engineer of Naval Construction, Navy Department, Paris, France.

AYER, ARTHUR WHITTIER, General Superintendent, Harrison Brothers & Company, 3403 Gray's Ferry Road, Philadelphia, Pa.

AYERS, SAMUEL L. P., Chief Engineer, U. S. N., Retired, 1420 Master St., Philadelphia, Pa.

В

BABCOCK, W. IRVING, Engineer and Naval Architect, 17 State St., New York.

Bacon, H. D., President and General Manager, Bath Marine Construction Co., Bath, Me.

Bailey, Charles F., Chief Engineer, Newport News S. B. & D. D. Company, Newport News, Va.

Bailey, Theodorus S., Asst. Chief Engineer, Electric Boat Co., Quincy, Mass.

BAKER, FREDERIC W., Constructor, Lake Engineering Co., Carlton House 11d, Regent St., London.

BANCROFT, J. SELLERS, General Manager, Lanston Monotype Machine Co., 1231 Callowhill St., Philadelphia. Pa.

BANKSON, LLOYD, Naval Constructor, U. S. N., Naval Station, Cavite, P. I.

BARRETT, GEORGE E., American Ship Windlass Co., Providence, R. I.

BARRUS, GEORGE HALE, Mechanical Engineer, 12 Pemberton Square, Boston, Mass.

- BARRY, RALPH E., Hull Draughtsman, Bureau C. & R., Navy Dept., Washington, D. C.
- BARTLETT, CHARLES H., Counsellor at Law, and Consulting Engineer, Patents and Admiralty Practice, 607 Pemberton Building, Boston, Mass.
- BATES, EDWARD P., Manufacturer and Contractor, 228
 West Water St., Syracuse, N. Y.
- BATES, WM. W., Naval Architect, 38 West Second Ave., Denver, Colo.
- BAUER, MAX HEINRICH, Naval Architect, Berlin W30, Nollendorfsti 29-30, Germany.
- BAXTER, WILLIAM J., Naval Constructor, U. S. N., Navy Yard, Brooklyn, N. Y.
- Belknap, Francis W., care Cox & Stevens, 15 William St., New York.
- Bernier, Louis Leon, General Manager, Multicoil Co., 80 Broad St., New York.
- Berrier-Fontaine, J. B. L., F. M., Directuer du Genie Maritime de Cadre de Reserve, 16 Boulevard de Strassbourg, Toulon-sur-mer, (Var), France.
- BERRY, WARREN TAYLOR, General Superintendent, Quintard Iron Works, foot 12th St., E. R., New York.
- Bertin, L. E., Director of Naval Construction, French Navy, 8 Rue Garanciere, Paris, France.
- Besselievre, Wm. C., Jr., Constructor, U. S. R. C. S., Custom House, Baltimore, Md.
- Beuret, John D., Naval Constructor, U. S. N., Navy Yard, Bremerton, Wash.
- BIGELOW, FRANK LEWIS, President, The Bigelow Co., New Haven, Conn.
- BILES, J. HARVARD, Professor Naval Architecture, University Glasgow, Glasgow, Scotland.
- BINNEY, ARTHUR, Naval Architect, Mason Building, Boston, Mass.

- BLANKENSHIP, JOHN MILLINGTON, Superintendent, Merchants' and Miners' Transportation Co., 1605 St. Paul Bldg., Baltimore, Md.
- BLOM, CHRISTIAN, Commander Norwegian Navy and Sub-Director of the Navy Yard, Horton, Norway.
- BOWERS, CHARLES C., Superintending Engineer, 151 Chilton St., Elizabeth, N. J.
- Bowers, Frederick C., Lieutenant-Commander, U. S. N., Inspector of Engineering Material, Hartford, Conn.
- Bowles, Francis T., President, Fore River Shipbuilding Co., Quincy, Mass.
- Brauchli, Jacob, Inspecting Draughtsman, office of Superintending Engineer, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va.
- Bray, C. D., Prof. Mechanical Engineer, Tuft's College, Mass.
- Brewer, Charles B., care of Jas. B. Ladd, Consulting Engineering, 1735 Real Estate and Trust Building, Philadelphia, Pa.
- Brown, Daniel D. B., 920 Virginia St., Vallejo, Cal.
- BRYSON, JOHN, Draughtsman, Bureau of Construction and Repair, Navy Dept., Washington, D. C.
- Buckelew, Charles Henry, Manager, New York Office, Ashton Valve Co., 128 Liberty St., New York. House—5 Rockview Ave., North Plainfield, N. J.
- Bull, Goold H., Professor of Marine Engineering, Webb's Academy, University Heights, New York.
- Burney, Charles E., Naval Architect, Union S. S. Co., 17 Battery Park, New York.
- Busch, Arthur L., Shipyard Superintendent, New Suffolk, L. I.

- CAPDEVIELLE, HENRY, Leading Draughtsman Bu C. & R., Navy Dept., Washington, D. C.
- CAPPS, WASHINGTON L., Rear-Admiral and Chief Constructor, U. S. N., Chief of the Bureau of Construction and Repair, Navy Dept., Washington, D. C.
- CARNES, WILLIAM F., Chief Engineer, Harlan & Hollingsworth Co., Alhambra Apartments, W. 16th St., Wilmington, Del.
- CARTER, GEORGE JOHN, Manager, Elswick Shipyard, Sir W. G. Armstrong, Whitworth & Co., Ltd., New Castle-on-Tyne, England.
- CARTER, T. F., Lieut.-Commander, U. S. N., Navy Yard, Pensacola, Fla.
- CASKEY, S. S., Pneumatic Tools, 2112 Tioga St., Philadelphia, Pa.
- Cassidy, Arthur B., Draughtsman in charge, Office of Superintending Constructor, Fore River Shipbuilding Co., 71 Winthrop Ave., Wollaston, Mass.
- CATHCART, WILLIAM LEDYARD, Gwynedd, Pa.
- CHAFFEE, J. IRVIN, Professor of Mathematics, Webb's Academy, Fordham Heights, N. Y.
- CHANDLER, L. H., Lieut.-Commander, U. S. N., Navy Dept., Washington, D. C.
- CHACE, MASON SMITH, 31 Wales St., Dorchester, Boston, Mass.
- CLARK, WALTER WILLIAM, Engineer, Babcock & Wilcox Co., Sterling Dept., Barberton, Ohio.

 Home—1322 Stiles St., Philadelphia, Pa.
- CLARKE, GEO., Genl. Mgr., Kensington Shipyard Co., Beach & Palmer Sts., Philadelphia, Pa. Home address—1322 Stiles St., Philadelphia, Pa.
- CLARKE, SAMUEL J., 309 West 103d St., New York.
- Collison, William Brown, Draughtsman, Navy Yard, Charleston, S. C.

- COOK, FRED. M., Naval Architect, Union St. Court, Bath, Maine.
- COP, HUIBERT, Prof. Naval Architecture, Polytechnical School at Delft, Oost Sirgel 61, Delft, Holland.
- CORNBROOKS, ERNEST I., Newport News S. B. & D. D. Co., Newport News, Va.
- CORNBROOKS, THOMAS M., Naval Architect, Maryland Steel Co., 511 Franklin Terrace, Sparrow's Point, Md.
- COWLES, WM. BARNUM, Consulting Naval Archite.t and Mechanical Engineer, Lake and Wason Sts., Cleveland, Ohio.
- Cox, Daniel H., Naval Architect, 15 William St., New York.
- Cox, Irving, Naval Architect, 15 William St., New York.
- COXE, WILLIAM GRISCOM, President, Harlan & Hollingsworth Co., Wilmington, Del.
- CRAIG, GEORGE L., 43 Produce Exchange, Toledo, O.
- CRAIG. JOHN. 43 Produce Exchange, Toledo, O.
- CRAIG, JOHN F., 43 Produce Exchange, Toledo, O.
- CRAMP. EDWIN S., 127 East 61st St., New York.
- CRAMP, WILLIAM M., 1227 N. Broad St., Philadelphia, Pa.
- CROWNINSHIELD, B. B., Naval Architect, 70 Long Wharf, Boston, Mass.
- CURR, ROBERT, Naval Architect, 1024 Rockefeller Bldg., Cleveland, O.
- CURTIS, CHARLES GORDON, International Curtis Marine Turbine Co., 2 Rector St., New York.
- CURWEN, HENRY ROBERT, Draughtsman, Fore River Shipbuilding Co., Quincy, Mass.

- Davidson, James Edward, Assistant General Manager, James Davidson, Shipbuilder, 1710 Centre Ave., Bay City, Mich.
- DAVIDSON, MARSHALL T., 108 St. James Place, Brooklyn, N. Y.
- DAVIS, CHARLES HENRY, Consulting Engineer, South Yarmouth, Mass.
- DAVIS, LEONARD D., 2668 Peach St., Erie, Pa.
- DEGELDER, WILLIAM HESSEL MARIUS, Manager L. Smit and Zoon, Ship and Engine Building Works, Kinderdyk, Holland.
- DeLAVAL, CARL GEORGE, General Manager, Henry R. Worthington Hydraulic Works, Harrison, N. J.
- Delong, Harold W., P. O. Box 1036, Bath, Me.
- Deming, William Henry, Draughtsman and and Mechanical Engineer, Continental Iron Works, Brooklyn, N. Y.
- DENTON, JAMES E., Professor Exp. Mechanics, Stevens Institute of Technology, Hoboken, N. J.
- DesAnges, H. L., Supt. Floating Equipment, L. I. R. R., Long Island City, N. Y.
- DIALOGUE, JOHN H., Shipbuilder, 515 Linden St., Camden, N. J.
- DICKEY, WM. D., Vice-Pres. and Genl. Mgr., Shooter Island Shipyard Co., Mariner Harbor, S. I. Room G-1, Produce Exchange, New York.
- DICKIE, DAVID W., Engineer and Naval Architect, 36 Stewart St., San Francisco, Cal.
- DICKIE, GEO. W., Naval Architect and Marine Engineer, San Mateo, Cal.
- DICKIE, JAMES, Naval Architect and Marine Engineer, 36 Stewart St., San Francisco, Cal.

- DICKINSON, RANDALL T., Consulting Engineer, Delaware River Ship and Engine Works, Chester, Pa.
- DIXON, ALBERT F., Captain, U. S. N., Bureau of S. E., Navy Dept., Washington, D. C.
- Dosson, Wm. A., Naval Architect, Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
- Dodd, Willis Gorman, Consulting Engineer, 17th and Capp Sts., San Francisco, Cal.
- Donald, James, Naval Architect, New York Shipbuilding Co., Camden, N. J.
- Donnelly, Wm. T., Consulting Mechanical Engineer, 132 Nassau St., New York.
- DuBois, A. J., C. E., M. E., Prof. of Engineering, Sheffield Scientific School, Yale College, New Haven, Conn.
- DuBosque, F. L., Assistant Engineer, Floating Equipment P. R. R., Jersey City, N. J.
- DUKE, JAMES OLIVER, Asst. Superintendent, Kensington Shipyard Company, Philadelphia, Pa.
- DURAND, WILLIAM F., Professor, Mechanical Engineering, Stanford University, California.

ю

- EBSEN, HENRY L., W. & A. Fletcher Co. House, 927 Bloomfield St., Hoboken, N. J.
- ECKART, WILLIAM R., Consulting Engineer, 3014 Clay St., San Francisco, Cal.
- EDSON, JARVIS B., 313 West 74th St., New York.
- EDWARDS, CHARLES B., Chief Engineer, Fore River Shipbuilding Co., Quincy, Mass.
- ELLIOTT, WILLIAM E., Chief Engineer, Goodrich Transportation Company, Chicago, Ill.
- ELWELL, HOWARD P., 78 Putnam St., Quincy, Mass.
- ENGARD, ALBERT C., Chief Engineer, U. S. N. (retired), 2131 North 19th St., Philadelphia, Pa.

- EPES, HENRY S., Assistant Naval Architect, Electric Boat Co., Quincy, Mass.
- EVANS, HOLDEN A., Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.
- EVERETT HAROLD ARTHUR, Instructor in Naval Architecture, Massachusetts Institute of Technology, Boston, Mass.
- EWERTZ, ERIC HAROLD, Supt. of Construction of Subm. Electric Boat Co., Quincy, Mass.; 63 Brook St., Wollaston, Mass.

F

- FAIRBURN, WILLIAM A., Suptg. Engineer, Southern Pacific Company, Pier 34, N. R., New York.
- FARGUSSON, MARK, Naval Architect and Engineer, Room 801, 11 Broadway, New York.
- FELTON, HERBERT C., Superintendent, Delaware River Ferries, Camden, N. J.
- FERGUSON, GEORGE R., Assistant Engineer, Department of Bridges, 1226 Park Row Building, New York.
- Ferguson, Homer L., Superintendent of Hull Construction, Newport News S. B. & D. D. Co., Newport News, Va.
- FERNALD, FRANK L., Naval Constructor, U. S. N. (retired), Eliot, Me.
- FERRAND, C., Engineer-in-Chief de la Marine Française, 48 Rue de Grenelle, Paris, France.
- FLETCHER, ANDREW, North River Iron Works, Hoboken, N. J.
- FLETCHER, WM. H., North River Iron Works, Hoboken, N. J.
- Floop, H. C., General Manager, Bergen Mekanikse Vaerksted, Bergen, Norway.

- FORBES, W. D., President, W. D. Forbes Co., 1300 Hudson St., Hoboken, N. J.
- FORD, DANIEL EDWARD, Superintendent of Construction and Repairs, Standard Oil Co., 26 Broadway, New York.
- FORSYTH, ROBERT, Consulting Engineer, 1020 Merchants Exchange, San Francisco, Cal.
- FRASER, ROBERT H., Consulting Engineer and Marine Surveyor, Chamber of Commerce Building, Boston, Mass.
- FREAR, HUGO P., Naval Architect, Union Iron Works, San Francisco, Cal.
- FRICK, HENRY EDGEWORTH, General Foreman, Fore River Shipbuilding Co., Quincy, Mass.
- FRIES, AXEL H., General Manager, Gefle Machine Works, Gefle, Sweden.

G

- GARDNER, JOHN HOWLAND, Superintendent, Marine Construction, New England Steamship Co., Newport, R. I.
- GARDNER, WM., Architect, 1 Broadway, New York.
- GATEWOOD WILLIAM, Chief Draughtsman, Hull Department, Newport News S. B. & D. D. Co., Newport News, Va.
- GILLMOR, HORATIO G., Naval Constructor, U. S. N., Superintending Constructor, Fore River S. B. Co., Quincy, Mass.
- GODBOLD, CHARLES H., JR., Draughtsman, Union Iron Works, San Francisco, Cal.
- GOLDEN, MICHAEL J., Professor Dynamic Engineering, Purdue University, Lafayette, Ind.
- Gray, Thomas, Director of Department Mechanical and Electrical Engineering, Rose Polytechnic Institute. House, 802 Chestnut St., Terre Haute, Ind.

GROESBECK, WM. G., Naval Constructor, U. S. N., New York Shipbuilding Co., Camden, N. J.

Gunnell, Elias, President, Manitowoc Dry Dock Co., Manitowoc, Wis.

H

HAIG, ROBERT, Surveyor, Lloyd's Register of Shipping, 324 Bourse, Philadelphia, Pa.

HAIGHT, ROBERT STANLEY, Amityville, L. I.

٠

Hall, Robert Everett, Secretary, New York Steam Fitting Co., 147 Lafayette St., New York, N. Y.

HALL, R. T., Commander, U. S. N., Navy Yard, New York.

HALL, THOMAS S., 423 51st St., Brooklyn, N. Y.

HALVORSEN, OLE G., Draughtsman, Engine Dept., N. Y. Shipbuilding Co., Camden, N. J.

Hammar, Hugo, Superintendent, Goteborg, Nya Verkstada A. B., Goteborg, Sweden.

HAND, HARRY W., General Manager, The Wm. Cramp & Sons' S. & E. B. Company, Philadelphia, Pa.

HANSCOM, CHARLES R., President, Eastern Shipbuilding Co., New London, Conn.

Hanscom, John F., Naval Constructor, U. S. N. (retired), Senior Member of Board on Changes, Room 11, Fourth Floor, P. O. Bldg., Philadelphia, Pa.

HARGAN, JAMES A., Chief Draughtsman, C. & R. Dept., Navy Yard, New York.

House, 1516 47th St., Brooklyn, N. Y.

HART, GEORGES, Chief Engineer, French-English Postal Service, 99 Rue La Fayette, Paris.

HARTT, WM. H., Chief Draughtsman, C. & R. Dept., Navy Yard, Norfolk, Va.

HAUG, JOHN, Superintendent Marine Transportation, Standard Oil Co., 2313 Durant Ave., Berkeley, Cal. HAWES, R. J., 42 East 21st St., New York.

- HAYWARD, H. S., Superintendent Motive Power, Pennsylvania R. R., Jersey City, N. J.
- HAY, MARLEY F., care of Whitehead & Co., Ltd., Fiume, Hungary.
- HECTOR, DETLOF A., Naval Architect, Bergsunds Mek. Verpstads, Aktiebolag, Stockholm, Sweden.
- HENDERSON, RICHARD, Captain, U. S. N. (retired), Salisbury, N. C.
- HERBERT, FREDERICK DAVIS, Hewitt, N. J.
- HERRESHOFF, JOHN B., President, Herreshoff Mfg. Co., Bristol, R. I.
- HERRESHOFF, NATHANIEL G., Vice-President and Manager, Herreshoff Mfg. Co., Bristol, R. I.
- HERRICK, JOHN J., Mechanical Engineer, Department Docks and Ferries, 424 Amity St., Flushing, L. 1.
- HEWITT, PETER COOPER, Scientist, Madison Square Garden Tower, New York.
- HIBBS, FRANK W., Superintending Engineer, Moran Bros. Co., Seattle, Wash.
- HIGGINS, HOWARD C., Superintending Engineer, Old Dominion S. S. Co., 81 Beach St., New York.
- HILL, EDWARD BUFFUM, Fore River Shipbuilding Co., Quincy, Mass.
- HILL, WARREN E., Vice-President, Continental Iron Works, Station G. Brooklyn, N. Y.
- HILLMANN, GUSTAV, Naval Architect, 470 Greene Ave., Brooklyn, N. Y.
- Hobson, R. P., House of Representatives, Washington, D. C., Home—2117 S St.
- Hollis, Ira N., Professor Mechanical Engineering, Harvard University, Cambridge, Mass.
- HOOVER, JOHN B., Naval Constructor, U. S. N. (retired), 22 Stiles St., Elizabeth, N. J.
- HOOVER, JOHN B., JR., Leading Draughtsman, Navy Yard, Norfolk, Va.

- HOPKINS, ALBERT LLOYD, Assistant General Manager, Newport News S. B. & D. D. Co., 2904 West Ave., Newport News, Va.
- HOPKINS, EDWARD, Naval Architect, Toledo Shipbuilding Co., Toledo, O.
- HOUGH, EDWARD STAMFORD SAMUEL, Engineer Surveyor, Bureau Veritas, 725 Merchants Exchange, San Francisco. Cal.
- HOUGHTON, WILLIAM, Chief Draughtsman, Office of Superintending Constructor, Bath Iron Works, Bath, Maine.
- HOVGAARD, W., Professor of Naval Design, Massachusetts Institute of Technology, Boston, Mass. House, 17 Winthrop St., West Newton, Mass.
- Howard, Oliver Zell, Draughtsman, U. S. Naval Experiment Station, 50 Franklin St., Annapolis, Md.
- Howell, William Neill, Chief Engineer, Simon Lake, Universitaets-Str. 3B, Berlin, Germany.
- HOXIE, WILLIAM D., Marine Department, Babcock & Wilcox Co., 85 Liberty St., New York.
- HOYT, FREDERICK M., President, Greenport Basin and Construction Co., Greenport, N. Y. Office, 45 Broadway, New York.
- HUNTER, GRORGE BURTON, Chairman and Director, C. S. Swan & Hunter Co., Ltd., Wallsend-on-Tyne, England.
- Hyde, Charles E., President and General Manager, The New London Marine Iron Works, New London, Conn.
- HYDE, EDWARD W., Bath Iron Works, Bath, Me. HYND, ALEXANDER, Consulting Engineer, 208 Western Reserve Bldg., Cleveland, O.

JACOBUS, DAVID S., 70 Summit Ave., Jersey City, N. J.

Jamsson, Constantin, Naval Architect and Marine Ergineer, Unions gtu 41, Helsingfors, Finland.

JEFFREY, FRANK, General Superintendent, Detroit Shipbuilding Co., Detroit, Mich.

JOHNSTON, ARCHIBALD, President, Bethlehem Steel Co., 120 Church St., Bethlehem, Pa.

Jones, Charles M., Consulting Engineer and Naval Architect, 1514 North Sixth St., Philadelphia, Pa.

Jonson, Julius, 51 East 96th St., New York.

JORDAN, S. S., Naval Architect and Engineer, Engineers' Club, West 40th St., New York.

K

KARMMERLING, GUSTAV, Commander, U. S. N., Room 518, No. 6 Beacon St., Boston, Mass.

KATZENSTEIN, LEOFOLD, Mechanical Engineer, 358 West St., New York.

Keough, William T., Consulting Engineer and Naval Architect, 932 Board of Trade Building, 131 State St., Boston, Mass.

KILLILEA, JAMES J., Superintendent of Construction, U. S. Light-House Establishment, 39 Howland St., Boston, Mass.

KING, FRANK B., Consulting Marine Engineer and Naval Architect, 1442 Rhode Island Ave., Washington, D. C.

KIRBY, FRANK E., Naval Architect, 609 Stevens Building, Grand River Ave., Detroit, Mich.

KONITZKY, H., Consulting Naval Architect, 15 S. Gay St., Baltimore, Md.

- LAING, ANDREW, Director and General Manager, The Wallsend Slipway and Engineering Co., Wallsendon-Tyne, England.
- LAKE, SIMON, President, Lake Torpedo Boat Co., Bridgeport, Conn.
- Lanza, Gaetano, Professor, Theoretical and Applied Mechanics, Massachusetts Inst., Tech., Boston, Mass.
- LASSOE, VALDEMAR F., Engineer and Naval Architect, Maritime Building, 8 Bridge St., New York.
- LAVERIE, ROBERT H., Superintendent, Shooter Island Shipyard Co., Mariner Harbor, New York.
- LEAVITT, FRANK M., Mechanical Engineer, 258 Broadway. New York.
- LEFLAIVE, L. J. G., Ex-Naval Constructor, French Navy, and Manager, Bietrix, Leflaive, Nicolet & Cie, Saint Etienne, France.
- Lee, Harold, Naval Architect and Engineer, Marion Building, Seattle, Wash.
- LELAND, WALTER S., Assistant Professor of Naval Architeciure, Massachusetts Institute of Technology, Boston, Mass.
- LEONARD, JOHN C., Lieutenant-Commander, U. S. N., Address, Inspector of Ornance, Cramps Shipyard, Philadelphia, Pa.
- LEPINE, F. C., Chief Carpenter, U. S. N., Navy Yard, New York.
- LEVENTHAL, PHILIP, Designing Engineer and Chief Draughtsman, with Wm. Gardner, 1 Broadway, New York.
- LIGNOLA RAIMONDO, Naval Constructor, Royal Italian Navy, R. Cantiere di Castellamare di Stabia, Italy. LILIEGREN, CARL OSCAR, Ingenior, Goteborg, Sweden.

•

- LILLIEHOOK, CHARLES J. F. M., Professor Naval Architecture, Royal Technical High School, Karlavigen 35, Stockholm, Sweden.
- LINCOLN, JAMES M., 405 Lenox Ave., New York.
- LINDFORS, HENRY A., Professor Naval Architecture, Chalmers Institute Technology, Gottenburg, Sweden.
- LINNARD, JOSEPH H., Naval Constructor, U. S. N., Bureau of C. & R., Navy Department, Washington, D. C.
- LOEWENSTEIN, LOUIS C., 16 Wolcott Road, Lynn, Mass.
- LOGAN, ROBERT, General Manager, American Shipbuilding Co., Cleveland, Ohio.
- LOVEKIN, LUTHER D., Chief Engineer, New York Shipbuilding Co., Camden, N. J.
- LOYD, JOHN, Mechanical Engineer, 558-562 Water St., New York.
- LUKE, WILLIAM JOSEPH, Naval Architect, John Brown & Company, Ltd., Clydebank, Scotland.
- LUCAS, THEODORE, 801 St. John's Place, Brooklyn, N. Y. LYSHOLM, HENRY, Superintendent of Hull Construction, New York Shipbuilding Co., Camden, N. J.

M

- McAllaster, Eugene L., Mechanical Engineer and Naval Architect, Haller Building, Seattle, Wash.
- McAllister, Charles Albert, Engineer-in-Chief, U. S. Revenue Cutter Service, Treasury Department, Washington, D. C.
- McBride, Lewis B., Assistant Naval Constructor, U. S. N., care of Navy Dept., Washington, D. C.
- McDermott, George R., Professor, School of Marine Construction, Sibley College, Cornell University, Ithaca. N. Y.
- McFarland, Walter M., Westinghouse Electric and Manufacturing Co., P. O. Box 911, Pittsburg, Pa.

- McGregor, Robert, Superintending Engineer, Metropolitan S. S. Co., Pier 45, N. R. House—Sherman Square Hotel, New York.
- McMurtrie, Laurence H., of McMurtrie-Guiler Co., Consulting Engineers, 82 Beaver St., New York.
- MACALPINE, JOHN H., Naval Architect and Consulting Engineer, 615 Walnut St., Philadelphia, Pa.
- MACLEAN, ALEXANDER J., Professor, Naval Architecture, Webb's Academy, University Heights, N. Y.
- MAGEE, EDWARD A., Chief Engineer, U. S. N. (retired), 187 Marcy Ave., Brooklyn, N. Y.
- Magee, Geo. W., Chief Engineer, U. S. N. (retired), 187 Marcy Ave., Brooklyn, N. Y.
- MAGRUDER, GEORGE M., Assistant Superintending Engineer, American-Hawaiian S. S. Co., 426 California St., San Francisco, Cal.
- MAGOUN, HENRY A., Vice-President, N. Y. Shipbuilding Co., Camden, N. J.
- MAIN, ARCHIBALD MACNICOL, Naval Architect, The Harlan & Hollingsworth Co., Wilmington, Del.
- MANCOR, JAMES HENRY, Principal Engineer Surveyor, Lloyd's Register of Shipping, 15 Whitehall St., New York.
- MANNING, CHARLES H., Passed Assistant Engineer, U. S. N. (retired), Superintendent, Amoskeag Mfg. Co., Manchester, N. H.
- MARVEL, THOMAS S., Shipbuilder, 51 Ann St., Newburg, N. Y.
- MATTHEWS, EVERETT M., Chief Draughtsman, C. & R. Dept., Navy Yard, League Island, Pa.
- MATTICE, Asa M., Works Manager, Walworth Mfg. Co., South Boston, Mass.
- MELLIN, CARL J., Consulting Engineer, American Locomotive Company, 1005 Union St., Schenectady, N. Y.

- MELVILLE, GEO. W., Rear-Admiral, ex-Engineer-in-Chief, U. S. N. (retired), 615 Walnut St., Philadelphia, Pa.
- MICKLEY, ALBERT J., Mechanical Engineer, Department of Docks and Ferries, St. George Ferry Terminal, Staten Island, N. Y.
- MIDDLETON, PERCY H., Vice-President, H. I. Crandal Company, 102 Border St., East Boston, Mass.
- MILLER, SPENCER, Chief Engineer, Cableway Department, Lidgerwood Mfg. Co., 95 Liberty St., New York. House, 217 Turrell Ave., South Orange, N. J.
- MILLS, EDMUND, in charge of Marine Department, The Babcock & Wilcox Co., Bayonne, N. J. House, 319 Arlington Ave., Jersey City, N. J.
- MILNE, JAMES STRACHAN, Union Iron Works, San Francisco, Cal.
- MIZUTANI, YOSHIHIKO, Engineer Captain, Japanese Navy Navy Yard, Kure, Japan.
- MONTEAGLE, ROBERT CHARLES, Chief Engineer, The Atlan tic Works, East Boston, Mass.
- Mooney, Thomas, Engineer, koach's Shipyard, Chester, Pa.
- Moore, Douglass G., 424 Westminster Ave., Elizabeth, N. J.
- MOORE, MILLER F., 45 East Fourth Ave., Roselle, N. J.
- Moore, Steward H., President, Marine Engineers Beneficial Association, No. 4, 5617 Lafayette Ave., Chicago, Ill.
- MORAN, ROBERT, Rosario, Isan Juan Co., Wash.
- MORITZ, ALBERT, Commander, U. S. N. (retired), 153 East 73d St., New York.
- MOSHER, CHARLES D., Mechanical Engineer, 1 Broadway, New York,

- Mower, Charles D., Naval Architect and Yacht Broker, 29 Broadway, New York.
- Muckle, M. R., Jr., Mechanical Engineer, 1722 Pine St., Philadelphia, Pa.
- MULL, JAMES HENRY, General Superintendent, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
- MULLER, GEORGE, Naval Architect and Engineer, 820 23d St., N. W., Washington, D. C.

N

- NEVINS, WILLIAM T., Superintendent Construction, 4 Sherman St., Chicago, Ill.
- NEWMAN, RICHARD LANO, Naval Architeci, 20 Russell St., Victoria, B. C.
- Nickum, Wm. Carr, Draughtsman, Wm. Cramp & Sons' S. & E. B. Co., 133 Apsley St., Philadelphia, Pa.
- NILSON, LEONARD J., Yacht Builder, Ferry Bar, Baltimore, Md.
- NISH, WILLIAM, Superintending Engineer, Anchor Line, 17-19 Broadway, New York.
- Nixon, Lewis, 26 Cortlandt St., New York.
- Nock, F. S., Naval Architect, East Greenwich, R. I.
- NORMAN, JOHAN HUGO, Assistant Chief Draughtsman, Hull Construction Department, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
- NORTON, HAROLD P., Commander, U. S. N., Bureau of S. E., Navy Dept., Washington, D. C.
- NUTTING, DANIEL CHAPLIN, Naval Constructor, U. S. N., Lureau of C. and R., Navy Department, Washington, D. C.
- Nystept, Thure G., Naval Constructor, Royal Swedish Navy, Carlskrona, Sweden.

O'NEIL, CHARLES, Rear-Admiral, U. S. N. (retired), "The Albany," Washington, D. C.

O'NEILL, JAMES J., Mechanical Engineer, The Fairfield Shipbuilding and Engineering Co., Ltd., Govan, Glasgow, Scotland.

P

PACKARD, ALPHEUS, APPLETON, Naval Architect and Engineer, 131 State St., Boston, Mass.

PAGE, CHARLES BARNARD, President, Page Engineering Co., Inc., 121 E. York St., Baltimore, Md.

Pahlow, Franklin, Conrad, Yard Superintendent, Great Lakes Engineering Works, Detroit, Mich.

PALEN, FREDERICK POMEROY, Assistant Chief Engineer, Newport News S. B. & D. D. Co., Newport News, Va.

PALMER, GEORGE Q., President, Quintard Iron Works, Foot of East 12th St., New York,

PALMER, NICHOLAS F., Jr. Treasurer and General Manager, Quintard Iron Works, Foot of East 12th St. New York.

PALMER, WILLIAM FRANKLIN, Architect and Managing Owner, Palmer Fleet, Uphams Cor., P. O. No. 27 Hartford St., Dorchester, Mass.

Parsons, Charles A., Director, Parsons Marine Steam Turbine Co., Wallsend-on-Tyne, England.

Parsons, H. DeB., Consulting Engineer, 22 William St., New York.

PATERSON, JAMES V., Vice-President and General Manager, The Moran Co., Seattle, Wash.

PATTERSON, JOSEPH SANBORN, Consulting Engineer, 340 73d St., Brooklyn, N. Y.

- Patterson, Harold W., Leading Hull Draughtsman, Gas Engine and Power Co., and Chas. L. Seabury Co., Morris Heights, N. Y.
- PAULI SVEN, Assistant Naval Constructor, Kockums Wharf, Malmo, Sweden.
- Peabody, Cecil H., Professor of Naval Architecture and Marine Engineering, Massachusetts Institute of Technology, Boston, Mass.
- Peacock, Edward L., Chief Constructor, Lake Torpedo Boat Co., Universitaets-Str. 3B, N. W. 7, Berlin, Germany.
- Penton, Henry, Engineer and Naval Architect, 814 Perry-Payne Building, Cleveland, Ohio.
- PERHAM, ERNEST A., 225 W. 33d St., New York.
- PERRY, WILLIAM A., 7 East 56th St., New York.
- Pessano, Antonio C., President, Great Lakes Engineering Works, Detroit, Mich.
- PITTS, THOMAS DORSEY, Civil Engineer, 101 E. Preston St., Baltimore, Md.
- PLATT, JOHN, 97 Cedar St., New York.
- POMMER, EUGENE R., Mechanical Engineer, Dept. of Water Supply, Gas and Electricity, Municipal Building, Brooklyn.
 - House-765 Jefferson Ave., Brooklyn, N. Y.
- POPPER, SIEGFRIED, Chief Constructor, Imperial and Royal Austro-Hungarian Navy, Pola, Austria.
- Post, Walter A., General Manager, Newport News S. B. & D. D. Co., Newport News, Va.
- POWELL, JOSEPH WRIGHT, Assistant to the President, William Cramp & Sons' Ship & Engine Building Co., Philadelphia, Pa.
- Powell, William T., 1699 31st St., Washington, D. C. Powers, Wilbur F., Hull Draughtsman, N. Y. Shipbuilding Co., Camden, N. J.

- PRATT, FRANCIS E., 53 Meadow Lane, New Rochelle, N. Y.
- Pray, Thomas, Jr., Consulting Engineer, P. O. Box 2809, Boston, Mass.
- PURDY, JAMES G., Chief Hull Draughtsman, Gas Engine and Power Co., and Chas. L. Seabury Co., Morris Heights, N. Y.
- PUSEY, CHARLES W., Claymont, Del.

R

- RAE, CHARLES W., Rear-Admiral and Engineer-in-Chief, U. S. Navy, Chief of the Bureau of Steam Engineering, Navy Department, Washington, D. C. House, 1827 Jefferson Place, Washington, D. C.
- RAYNAL, ALFRED H., Bureau of Steam Eng., Navy Yard,
- 1626 Riggs Place, N. W., Washington, D. C.
 REBOLLEDO, MIGUEL, Ingeniero, Calle Sur, 34, No. 5,
 Mexico City, Mexico.
- REDGRAVE, DEWITT C., Commander, U. S. N. (retired),
 Supervisor of Naval Auxiliaries, Custom House,
 Baltimore. Md.
- NICHARDS, CHARLES B., Professor, Mechanical Engineering, Sheffield Scientific School, Yale University, 227 Edwards St., New Haven, Conn.
- RICHSON, CARL, Naval Constructor, Royal Swedish Navy, Riddarholmen 11, Stockholm, Sweden.
- RILEY, ROBERT S., General Manager, American Ship Windlass Co., Providence, R. I.
- RITCHIE, JACOB S., 62 Beaver St., New York.
- ROBERT, WILLIAM P., Naval Constructor, U. S. N., Navy Yard, New York.
- ROBERTS, THOMAS GAINES, Naval Constructor, U. S. N., Navy Yard. New York.
- ROBINSON, EDWARD P., Superintendent, Atlantic Works, 80 Border St., East Boston, Mass.

- ROBINSON, RICHARD H. M., Naval Constructor, U. S. N., Bu. C. & R., Navy Department, Washington, D. C.
- ROBINSON, S. W., Professor Emeritus, Mechanical Engineering, Ohio State University, 1353 Highland Si., Columbus, Ohio.
- ROCHE, GEORGE W., Chief Engineer, U. S. N. (retired), 1304 McCullough St., Baltimore, Md.
- ROCK, GEO. H., Naval Constructor, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va.
- ROEDDER, O. C., Consulting Engineer, 38 Klauprecht-Str., Karlsruhe, Germany.
- ROELKER, CHARLES R., Rear-Admiral, U. S. N., 1434 Q St., N. W., Washington, D. C.
- ROELKER, H. B., Mechanical Engineer, 41 Maiden Lane, New York.
- ROSSELL, AXEL GUSTAF, Chief Draughtsman, Construction Department, Wm. Cramp & Sons' S. & E. B. Co., Philadelphie, Pa.
- ROTTMER, HENRY E., Draughtsman, Bureau Construction and Repair, Navy Department, Washington, D. C.
- Row, Reuben Robert, General Superintendent, The Griscom-Spencer Co., 90 West St., New York.
- ROWEN, JOSEPH B., Fore River Shipbuilding Co., Quincy, Mass.
- ROWLAND, CHARLES B., Assistant Secretary and Engineer, Continental Iron Works, Brooklyn, N. V. House, 329 Madison Ave., New York.
- ROWLAND, T. F., President, Continental Iron Works, Brooklyn, N. Y. House. 320 Madison Ave., New York.
- ROWLAND, THOMAS F., JR., Secretary-Treasurer, The Continental Iron Works, West and Calyer Sts., Brooklyn, N. Y.

ROWLAND, WILLIAM, 90 Wall St., New York.

RUHM, THOMAS F., Naval Constructor, U. S. N., Superintending Constructor, Moran Bros. Co., Seattle, Wash.

8

Sabri, S., Lieutenant-Commander, Imperial Ottoman Navy, Constantinople, Turkey.

SADLER, HERBERT C., Professor, Naval Architecture, University Michigan, Ann Arbor, Mich.

SADTLER, EDWIN BEALE, Naval Architect, The Harlan & Hollingsworth Co., Wilmington, Del.

SAVAGE, SILAS ANTHONY, Assistant Superintending Engineer, U. S. Light-House Board, 713 13th St., Washington, D. C.

Schock, Edson B., Naval Architect, Yacht and Ship Broker, 9 Murray St., New York.

Schoffeld, Charles Naval Architect and Surveyor, 39 Main St., Tottenville, N. Y.

SCHULZE, HENRY H., Fore River S. B. Co., Quincy, Mass. SCHWAB, CHARLES M., 111 Lroadway, New York.

Scott, J. Alvah, Naval Architect, 95 Liberty St., New York.

Scribner, Edward H., Commander, U. S. N. (retired), 70 Tyler Park, Lowell, Mass.

SEABURY, CHARLES L., Gas Engine and Power Co., and Chas. L. Seabury Company, Consolidated, Morris Heights, New York.

SEE, HORACE, Naval Architect and Marine Engineer, 1 Broadway, New York.

SELLERS, COLEMAN, Consulting Engineer, 1304 Stephen Girard Building, Philadelphia, Pa.

Sellers, Coleman, Jr., President and Engineer, Wm. Sellers & Co., 1600 Hamilton St., Philadelphia, Pa.

- SHERWOOD, JOHN ROBERTS, Vice-President and General Manager, Baltimore Steam Packet Co., Baltimore, Md.
- SIMS, JAS. W., 21 Hope St., Hampton, Va.
- SKENTELBERY, CHARLES, Marine Superintendent Massachusetts Steamship Co., Shawmount Bank Building, Boston, Mass.
- SKINNER, HARRY G., President, The Wm. Skinner & Sons' S. B. & D. D. Co., Foot of Cross St., Baltimore. Md.
- SLOAN, HORACE T., JR., Chief Draughtsman, Floating Equipment, Pennsylvania R. R. Co., Jersey City, N. J.
- SLOAME, JOHN D., Dubuque, Iowa.
- SMITH, A. CARY, Naval Architect, 90 Wall St., New York.
- SMITH, A. G., General Superintendent, Chicago Shipbuilding Co., Chicago, Ill.
- Smith, Carroll S., New York Agent, Wm. Cramp & Sons' S. & E. B. Co., 100 Broadway, New York.
- SMITH, FRANCIS B., Chief Engineer, Pittsburg Steamship Co., Rockefeller Building, Cleveland, Ohio.
- SMITH, G. EDWARD, Smith & Robinson, Engineers, 605
 Provident Bulding, Philadelphia, Pa.
- SMITH, GODFREY L., Civil Engineer, Newport News S. B. & D. D. Co., Newport News, Va.
- SMITH, JAMES M., Manager, Collingswood Shipbuilding Co., Collingwood, Canada.
- SMITH, HENRY G., General Manager, Fore River Shipbuilding Co., Quincy, Mass.
- SMITH. SOMMERS N., Receiver, Neafie & Levy S. & E. B. Co., Philadelphia, Pa.
- SMITH, STUART FARRAR, Naval Constructor, U. S. N., Bureau C. & R., Navy Department, Washington, D. C.

SMITH, WILLIAM BLACKBURN, Engineer and Contractor, Perth Amboy, N. J.

SMITH WM. STROTHER, Commander, U. S. N., Bureau S. E., Navy Dept., Washington, D. C.

SNEDDON, JAMES PRENTICE, Third Vice-President, Stirling Consolidated Boiler Co., Barberton, Ohio.

Snow, Elliot, Naval Constructor, U. S. N., Navy Yard, Boston. Mass.

Soliani, Nabor, Direxione, del Cantiere Navale, Gio Ansaldo & C., Sestri Ponente, Italy.

Spangler, Henry W., Professor, Mechanical Engineering, University of Pennsylvania, Philadelphia, Pa. Spear, Lawrence, Vice-President, Electric Boat Co.,

Quincy, Mass.

SPERRY, AUSTIN, Naval Architect, 131 Main St., San Francisco, Cal.

SPILMAN, JOHN A., Assistant Naval Constructor, U. S. N., Superintending Constructor, Bath Iron Works, Bath, Me.

STAHL, A. W., Naval Constructor, U. S. N., Navy Yard, Portsmouth, N. H.

STEARNS, WILLIAM B., Naval Architect, Marblehead, Mass.
STEVENS, JOHN A., Chief Engineer, Merrimack Mfg. Co.,
Lowell, Mass.

House-78 Hanks St.

STILLMAN, FRANCIS HILL, President, The Watson-Stillman Co., 25 Dey St., New York.

STOCKER, ROBERT, Naval Constructor, U. S. N., Board of Inspection and Survey, Navy Dept., Washington, D. C.

STRATTON, E. PLATT, 66 Beaver St., New York.

STUART, SINCLAIR, Ship and Engine Surveyor, 16-18 Exchange Place, New York.

Sugitani, Yasnichi, Ship Yard Manager, Mitsu Bishi Dock Yards & Engine Works, Nagasaki, Japan.

- SUTPHEN, H. R., Vice-President and General Manager, Electric Launch Co., Bayonne, N. J.
- SWAN, JAMES, New York Shipbuilding Co., Camden, N. J.
 SWENSON, WILLIAM H. C., Managing Director, Trondhjems Shipbuilding and Engineering Co., Trondhjems,
 Norway.

\mathbf{T}

TANDY, FRANK N., Marine Agent, Thorpe Bldg., cor. Broadway and Franklin St., Los Angeles, Cal.

,*

- TAWRESEY, JOHN G., Naval Constructor, U. S. N., Superintending Constructor, Union Iron Works, San Francisco, Cal.
- TAYLOR, DAVID W., Naval Constructor, U. S. N., Bureau Construction and Repair, Navy Dept., Washington, D. C.
- TAYLOR, STEVENSON, Vice-President, Quintard Iron Works, foot of East 12th St., New York.
- THAYER, IGNATIUS E., Naval Architect and Marine Engineer, 126 Beale St., San Francisco, Cal.
- THAYER, JR., HORACE HOLDEN, Engineer, Parsons Engineering Co., Equitable Building, Wilmington, Del. House—1208 Rodney St., Wilmington, Del.
- THOMAS, CARL CLAPP, Prof. Marine Engineering, Cornell University, Ithaca, N. Y.
- THOMPSON, ARTHUR WELLINGTON, 415 W. 115th St., New York.
- THOMPSON, JAMES A., 1030 Cauldwell Ave., Bronx, New York.
- Tobey, William L., Mechanical Engineer, Lockwood Mfg. Co., 85 Sumner St., East Boston, Mass.
- TOBIN, J. A., Past Asst. Engineer, U. S. N. (retired), 32 Vine St., East Providence, R. I.

TODD, WILLIAM HENRY, General Superintendent, John N. Robins Co., Erie Basin, Brooklyn, N. Y.

House-Hotel St. George, Brooklyn, N. Y.

TORREY, JOHN D., Draughtsman, Bureau C. & R., Navy Dept., Washington, D. C.

Towne, N. P., Chief Engineer, Wm. Cramp & Son's Ship and Engine Building Co., Philadelphia, Pa.

TRUE, DWIGHT, Chief Hull Draughtsman, Great Lakes Engineering Works, Detroit, Mich.

Tuska, Gustave R., Consulting Engineer, 62 William St., New York.

II

UBSDELL, JOHN A., Great Lakes Engineering Works, Detroit, Mich.

V

VAN BUREN, JOHN D., Civil Engineer, New Brighton, N.Y.

Van Vleck, Frank, Baltimore Copper Works, 2014 Park Ave., Baltimore, Md.

VARNEY, WILLIAM H., Naval Constructor, U. S. N., (retired)., 712 N. Carey St., Baltimore, Md.

VARNEY, WILLIAM W., Mechanical Engineer, Attorney at Law, 710 N. Carey St., Baltimore, Md.

VOLLMAN, CARL WILHELM, President, Linde British Refrigeration Co., Coristine Bldg., Montreal, Can.

Volz, William E., Mechanical Engineer, Wheeler Condenser & Eng. Co., 42 Broadway, New York.

w

WADDINGTON, JAMES F., Draughtsman, New York Shipbuilding Co., Camden, N. J.

WALKER, LOUIS W., Master Mechanic, P. R. R., Jersey City, N. J.

- Walker, Robert J., Director, Parsons Marine Steam Turbine Co., Turbinia Works, Wallsend-on-Tyne, England.
- WALLACE, JAMES C., President, American Shipbuilding Co., Cleveland, Ohio.
- WALLACE, W. CARLILE, Marine and Consulting Engineer, representative John Brown & Co., Ltd., 25 Whitehall St., New York.
- Wallace, William M., Computer, Bureau Construction and Repair, Navy Dept., 616 18th St. N. W., Washington, D. C.
- WALLEM, AXEL B., Chief Draughtsman, Engine Dept., New York Shipbuilding Co., Camden, N. J.
- WARD, CHARLES, Mechanical Engineer, Charleston, Kanawha Co., W. Va.
- WARD, CHARLES EDWIN, President and General Manager The Charles Ward Engineering Works, Charleston, W. Va.
- WARREN, OGLE TAYLOR, Asst. Superintendent, Great Lakes Engineering Works, Detroit, Mich.
- WARRINGTON, JAMES N., Mechanical Engineer, 1419 Dominis St., Honolulu, Hawaii.
- WATERHOUSE, WILLIAM E., Naval Architect and Engineer, 15 Whitehall St., New York.
- WATERS, J. W. LOWRY, 111 Fort Greene Place, Brooklyn, New York.
- WATT, RICHARD M., Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.
- WATTERSON, WILLIAM WALLACE, Superintendent of Construction, Pittsburg Steamship Co., Cleveland, O.
- WATTS, PHILIP, SIR, K. C. B., Director of Naval Construction of the British Admiralty, 10 Chelsea Embankment, London, S. W., England.
- WEAVER, WILLIAM D., Mechanical Engineer, 55 Demarest Ave., Englewood, N. J.

- WEED, GEORGE E., 32 West 40th St., New York.
- Wellin, Axel, Hopeton House, Lloyds Av, London, Eng. Wellenkamp, Herman, Royal Marine Shipmaster, Wharf, Kiel. Germany.
- WESTMACOTT, ALFRED, Managing Director, Westmacott, Stewart & Co., Ltd., St. Helens, Isle of Wight, Eng.
- WETHERBEE, CHARLES PHELPS, Supt. Engineer, Bath Iron Works, Bath, Maine.
- Wheeler, Clifton Harold, C. H. Wheeler Mfg. Ci., Lehigh Ave. and 18th St.; residence, 521 Lincoln Drive, Pelham, Philadelphia, Pa.
- WHEELER, FREDERICK M., Wheeler Condenser & Engineering Co., 90 West St., New York; residence, 159 Gates Ave., Montclair, N. J.
- WHEELER, HARRY, Supt. Engineer, Lamport & Holt Line, Pier 8, Brooklyn, N. Y.
- WHITAKER, MORRIS M., Whittelsey & Whitaker, 11 Broadway, New York.
- WHITHAM, JAY M., Mechanical Engineer, 607 Bullits Bldg., Philadelphia, Pa.
- WHITNEY, EDWIN H., Mechanical Engineer, P. O. Box 295, Waterford, N. Y.
- WHITTLESEY, H. NEWTON, Whittlesey & Whitaker, 11 Broadway, New York City.
- WILEY, CLARENCE W., Marine Superintendent, Boston S. S. Co., Box 202, Seattle, Wash.
- WILKINSON, HENRI, Chief Surveyor, Bureau Veritas, 17 State St., New York.
- WILLARD, CHARLES FRANKLIN, Fourth Assistant Examiner, U. S. Patent Office, 1340 Girard St., Washington, D. C.
- WILLIAMS, FAIRFAX, General Manager The Washington Engineering Co., 210 Oriental Block, Seattle, Wash.
- WILLIAMS, LLEWELLYN, Supt. of Refrigeration, United Fruit Co., 131 State St., Boston, Mass.

- WILLIAMS, Louis, General Superintendent, Superior Shipbuilding Co., Superior, Wis.
- WILLIAMSON, JOHN D., JR., Vice-President, Williamson Bros., Aramingo Ave. and Cumberland St., Philadelphia, Pa.
- WINANT, WM. E., Leading Draftsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.
- WINSHIP, JAMES G., Mechanical Engineer and Salesman, Geo. F. Blake Mfg. Co., 114 Liberty St., New York. Residence—1248 Pacific St., Brooklyn, N. Y.
- WINTRINGHAM, H. C., Naval Architect, Hudson Bldg., 32 Broadway, New York.
- WOOD, SIDNEY L., Asst. Engineer, Newport News S. B. & D. D. Co., 232 49th St., Newport News, Va.
- Wood, William J., Naval Architect, Ship Surveyor and Consulting Engineer, 543 Postal Telegraph Building, 280 La Salle St., Chicago, Ill.
- Woods, Allen D., Marine Engineer, Central Railroad of N. J., Jersey City, N. J.
- WOODY, WILLIAM HENRY, JR., 2818 East Franklin St., Richmond, Va.

Y

- YAMAMOTO, NAGARATO, Chief Draughtsman, Ship Dept., Mitsu Bishi Dock Yards & Engine Works, Nagasaki, Japan.
- YEOMANS, CLIFTON, 1728 Channing Way, Berkeley, Cal.
- Young, James, Chief Draughtsman, Hull Dept., New York Shipbuilding Co., Camden, N. J.
- Young, Philip M., Chief Draughtsman, Eng. Dept., New York Shipbuilding Co., Camden, N. J. House—1526 Arch St., Philadelphia, Pa.

ZAHM, FRANK BAKER, Naval Constructor, U. S. N., Naval Station, San Juan, P. R.,

ZEITER, FRIEDRICH, Lecturer on Marine Engineering at Technikum, Bulowstr 22, Bremen, Germany.

ZIRPEL, RUDOLPH, Supt. of Construction, U. S. Light House Service; house, 523 3d St. N. E., Washington, D. C.



ASSOCIATES

A

- Adams, Roger P., Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va.
- ALDRICH, HERBERT L., President and Manager, International Marine Engineering, Whitehall Building, 17 Battery Place, New York.
- ALLAN, ERNEST A., Draughtsman, 97 Oak St., Bath, Me.
- ALLAND, KARL E. W., Draughtsman, Ronnebygatan, Carlskrona, Sweden.
- ALLEN, W. W., Consulting Engineer, Rooms 1307-8, 24 Broad St., New York.
- AMORY, JOHN J., President, Gas Engine & Power Co., and Charles C. Seabury Co., Consolidated, Morris Heights, N. Y.
- ANCKER, WALTER, Supt. Floating Equipment, B. & O. R. R. Co., Camden Station, Baltimore, Md.
- ANDRESEN, ELLIOTT I. G., Asst. Manager, Holzapfel's Composition Co., 18 Broadway, New York.
- Andrews, Jacob R., President Hyde Windlass Co., Bath, Maine.
- Arnold, Conway H., Captain, U. S. N., care Navy Dept., Washington, D. C.

В

- BAILEY, JOHN E., Asst. Naval Constructor, U. S. N., Navy Yard, Pensacola, Fla.
- Bailey, W. H., Agent, American Tube Works, P. O. Box No. 1. New York.
- Balls, William H., Instructor of Mathematics and Drawing, Philadelphia Trades School, Philadelphia, Pa.

- BARBEY, HENRY G., Naval Designer, 52 Pine St., N. Y. BARNES, A. T., Contracting Engineer, Sharon, Mass.
- BARRE, JOSEPH, of Jos. Barre & Co., 25 Fulton St., New York.
- BARRY, EDWARD B., Captain, U. S. N., Supervisor of Naval Auxiliaries, Custom House, New York.
- BATES, GEORGE HAROLD, Hampton Hall, Cranford, N. J.
- BATTIN, THOMAS WILSON, P. O. Box 207, Philadelphia, Pa.
- BENT, STEDMAN, Purchasing Agent, Maryland Steel Co., 306-311 Girard Bldg., Philadelphia, Pa. House—Overbrook, Pa.
- BICKFORD, ROBERT G., General Counsel, Newport News S. B. & D. D. Co., Newport News, Va.
- BISSET, GUY ALOYSIUS, Asst. Naval Constructor, U. S. N., Naval Station Cavite, P. I.
- BLISS, JOHN LORD, John Bliss & Co., Manufacturer of Marine Chronometers and Nautical Instruments, 128 Front St., New York.
- BLOOMSBURG, HARRY BROWN, Draughtsman, Baltimore Shipbuilding and Dry Dock Co. House address, 425 N. Carey St., Baltimore, Md.
- Boas, Emil L., General Manager, Hamburg-American Line, 37 Broadway, New York.
- BORIE, ADOLPHE E., Vice-President, New Jersey Zinc Co., 71 Broadway, New York.
- BOUCHER, HORACE E., Mechanical and Model Shops, 91 Maiden Lane, New York.
- Bowes, Jr., Thomas D., M. E. Naval Architect, Bowes Bldg., Philadelphia.
- BOYD, WILLIAM, Second Leading Draughtsman, Cramps' Shipyard, Philadelphia, Pa.

- Bradfield, George K., Special Representative, Vacuum Oil Co., 29 Broadway, New York.

 House—Hackensack. N. I.
- Brill, Philip B., Calculating Draughtsman, Bu. C. & R., Navy Dept., Washington, D. C.
- Brinton, Frederick S., Naval Architect, Marion Building, Seattle, Wash.
 - Brown, William L., Pickands, Brown & Co., 1740 Commercial Bank Building, Chicago, Ill.
- Brown, Wilson, 78 Front St., Binghamton, N. Y.
 - BROWNSON, WILLARD H., Rear Admiral, Navy Dept., Washington, D. C.
 - BRUTON, JOHN F., Foreman Machinist, Fore River Shipbuilding Co., Quincy, Mass.
- BRYAN, HENRY F., Lieut.-Commander, U. S. N., No. 6 Sampson Row, Naval Academy, Annapolis, Md.
- BUCKELEW, CHARLES WILLIAM, Ship Designer, 126 W. 5th St.. Plainfield, N. J.
- BUCKNAM, CAPTAIN R. D., U. S. Embassy, Constantinople, Turkey.
- BURNHAM, JOHN W., Chief Carpenter, U. S. N., Navy Dept., Washington, D. C.
- Burton, Herbert, Draughtsman, Moran Bros. Co., Seattle, Wash.
- BUTTS, CHARLES SPOONER, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

C

- CARROLL, ROYAL PHELPS, Yachtsman, Knickerbocker Club, New York.
 - CAVERLY, LEROY EUGENE, Estimator, Union Iron Works, San Francisco, Cal.
- CHAMBERS, WASHINGTON I., Commander, U. S. N., Navy Dept., Washington, D. C.

- CHESTER, ARTHUR T., The Aeolian Co., 362 Fifth Ave., New York.
- Church, Edwin F., Jr., Professor of Mechanical Engineering, West Virginia University, Box 622, Morganstown, W. Va.
- CHURCH, Wm. CONANT, Editor, Army and Navy Journal, 99 Nassau St., New York.
- CLIFFORD, JAMES A., Electrical Engineer and General Salesman, B. F. Sturtevant Co., Jamaica Plain, Boston, Mass.
- CLYDE, THOMAS, Ship Owner, 17 State St., New York.
- CLYDE, WILLIAM P., Ship Owner, 17 State St., New York.
- COLE, WINTHROP, Draughtsman, Bureau of S. E., Navy Dept., Washington, D. C.
- COX, LEONARD MARTIN, Civil Engineer, U. S. N., Navy Yard, Norfolk, Va.
- CRAIG, JOSEPH E., Rear-Admiral, U. S. N., 1729 G St., Washington, D. C.
- CRANE, ALEXIS, New York Manager and Special Expert Ship Equipment, Art Metal Construction Co., 346 Broadway, New York.
- CRANE, CLINTON H., care Tams, Lemoine & Crane, 52 Pine St., New York.

\mathbf{D}

- DALTON, HENRY G., Managing Partner, Pickands, Mather & Co., Western Reserve Bldg., Cleveland, O.
- DAVIDS, WILLIAM CULVER, Mechanical and Structural Engineer, 65 Francisco Ave., Rutherford, N. J.
- DAY, MAXWELL W., Assistant Engineer, Power and Mining Dept., General Electric Co., Schenectady, N. Y.
- Deming, Richard, care American Surety Co., 100 Broadway, New York.
- DENISE, EDWIN S., Marine Dept., Deane Steam Pump Co., 133 Liberty St., New York.

DICK, THOMAS B., Chief Draughtsman, C. & R. Dept., Navy Yard, Mare Island, Cal.

DICKIE, JAMES SPIERS, 36 Stewart St., San Francisco, Cal.

DIMOCK, WM. DE WOLF, Agent, New York Shipbuilding Co., 12 Broadway, New York.

DOCK, HERMAN, Mechanical Engineer, Hope Valley, R. I.

Dolan, Thomas, Director, Wm. Cramp & Sons' S. & E. B. Co., U. G. I. Bldg., Philadelphia, Pa.

Donaldson, Henry F., 1402 Broadway, New York.

Donovan, Richard J., American Bridge Co., 1456 Frick Bldg., Pittsburg, Pa.

DOWNEY, WALLACE, President, Kingsley Water-Tube Boiler Co., 21 State St., New York.

DRAKE, FRANKLIN J., Rear Admiral, U. S. N. (Retired), The Farragut, Washington, D. C.

DuBose, William Gunnell, Naval Constructor, U. S. N., Naval Station, Cavite, P. I.

DUNCAN, WM. B., JR., Havemeyer Bldg., Cörtlandt St., New York.

DUNTLEY, JOHN WHEELER, President, Chicago Pneumatic Tool Co., 1019 Fisher Building, Chicago, Ill.

E

EATON, JAMES W., General Manager and Treasurer, New York Kerosene Oil Engine Co., 31 Burling Slip, New York.

ECKERT, LOUIS, Draughtsman, Newport News Shipbuilding and Dry Dock Co., Newport News, Va.

EGGERT, ERNEST FREDERICK, Naval Constructor, U. S. N., Navy Yard, Boston, Mass.

Elmquist, E., Naval Constructor, Swedish Navy, Carlskrona, Sweden. Engeman, W. A., President, Benvenue Granite Co., 41 Park Row, New York.

ETTER, HARRY B., Designing Draughtsman, Wm. Cramp & Sons' S. & E. B. Co., 2326 N. 17th St., Philadelphia. Pa.

EVANS, ROBLEY D., Rear-Admiral, U. S. N., Commanderin-Chief U. S. Atlantic Fleet, U. S. F. S. Connecticut; home, 324 Indiana Ave., Washington, D. C.

F

FARRINGTON, W. C., Vice-President, Pacific Coast S. S. Co., San Francisco, Cal.

FERGUSON, JR., WILLIAM BURDER, Assistant Naval Constructor, U. S. N., Navy Yard, New York.

FIELD, EDWARD P., Naval Architect and Engineer, Maritime Bldg., New York.

FOGARTY, W. B., Assistant Naval Constructor, U. S. N., New York Shipbuilding Co., Camden, N. J.

FROST, ELIHU B., Treasurer and Manager, Electric Boat Co., 11 Pine St., New York.

Furer, Julius Augustus, Assistant Naval Constructor, U. S. N., Navy Yard, Charleston, S. C.

G

GANTT, HENRY L., Consulting Engineer, 65 Summit St., Pawtucket, R. I.

GARDINER, GEORGE N., 15 William St., New York.

GARDINER, GEORGE N., Jr., George N. Gardiner & Son, 15 William St., New York.

GARDINER, BENTLEY, George N. Gardiner & Son, 15 William St., New York.

GARTLEY, ALONZO, General Manager, Hawaiian Electric Co., Honolulu, H. I.

GIPS, ADRIAN, General Agent, Holland-America Line, 39 Broadway, New York.

- GOODRICH, ALBERT W., President Goodrich Transportation Co., foot of Michigan Ave., Chicago, Ill.
- GOULDER, HARVEY D., Proctor in Admiralty, 915 Rockefeller Bldg., Cleveland, O.
- GREENE, S. CUYLER, Draughtsman, Hyde Windlass Co., P. O. Box 1015, Bath, Me.
- GRISCOM, CLEMENT A., JR., 5 Nassau St., New York.
- GROVE, HENRY S., President, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.

H

- HAGSTROM, O. P., Leading Draugatsman, Newport News S. B. & D. D. Co., P. O. Box 628, Newport News, Va.
- HALL, FRANK DAVID, Assistant Naval Constructor, U. S. N., Assistant to the Superintending Constructor, Cramps Shipyard, Philadelphia, Pa.
- HANSCOM, ISAIAH CLIFFORD, 69 Magazine St., Cambridge, Mass.
- Hebbinghaus, Hans Georg, Captain, Imperial German Navy, Naval Attache, German Embassy, Washington, D. C.
- HEDSTROM, BERNARD, Hull Draughtsman, New York Shipbuilding Co., Camden, N. J.
- HENRY, SIDNEY MORGAN, Assistant Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.
- HERRIMAN, HORATIO NELSON, Surveyor to Great Lakes Register & Bureau Veritas, Cleveland, O.
- HILL, EBENEZER, General Manager, Norwalk Iron Works Co., S. Norwalk, Conn.
- HILKEN, PAUL GERHARD L., General Foreman, Hull Construction Marine Dept., Maryland Steel Co., Sparrow's Point, P. O. 1130, Baltimore, Md.
- HYDE, JOHN S., President and General Manager, Bath Iron Works, Bath, Me.

IRELAND, ROBERT L., M. A. Hanna & Co., Cleveland, O. IRVING, WASHINGTON, 622 California St., San Francisco, Cal.

J

- JONES, FRANK BOWNE, Yacht Agent and Ship Broker, 29 Broadway, New York.
- JOY, RICHARD P., President, National Bank of Commerce, 510 Penobscot Building, Detroit, Mich.
- JUPP, ALFRED J., Agent, The Lukenheimer Co., 68 Fulton St., New York.

K

- KATZENSTEIN, JACOB, Supt., L. Katzenstein & Co., 358 West St., New York.
- KATZENSTEIN, MARTIN L., Manager, Marine Dept., International Steam Pump Co., 144 Liberty St., New York.
- Keilholtz, P. O., Secy. and Supt., The United Electric Light and Power Co., Merchant's Bank Bldg., Baltimore, Md.
- Keller, Otto B., with Keuffel & Esser Co., 56 Manhattan Ave.. New York.
- Kellogg, James W., Manager Marine Sales, General Electric Co., 10 Front St., Schenectady, N. Y.
- Kemble, Parker H., President, Northern Connecticut Light and Power Co., Windsor Locks, Conn.
- KEMPFF, Louis, Rear Admiral, U. S. N. (retired), U. S. Navy Pay Office, San Francisco, Cal.
- Kirchhoff, C., Editor Iron Age, 14 and 16 Park Place, New York.

- LARKIN, FRANK PROVOOST, Draughtsman, Engineering Department, Fore River S. B. Co., Quincy, Mass.
- LAWRENCE, GEORGE E., Barrett & Lawrence, Engineers, Bullitt Building, Philadelphia, Pa.
- LAWRENCE, GEORGE E., Asst. General Foreman, Hull Engineering Dept., Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa.
- LAWTON, NEWBURY D., 60 Wall St., New York.
- LINDSAY, JAMES G., SR. Member of James G. Lindsay & Co., Arcade Bldg., Philadelphia, Pa.
- LITTLEFIELD, CHARLES EDWIN, Navigator, School Ship "St. Mary's," Foot E. 24th St., New York.
- Longstreth, Charles, President, U. S. Metallic Packing Co., 427 N. 13th St., Philadelphia, Pa.
- Lord, Frederick Kissam, Draughtsman, 105 Lord Ave., Bayonne, N. J.
- LORD, JOHN A., Carpenter, U. S. N., Bath Iron Works, Bath, Me.
- LUNDIN, ANDREAS P., Manager, The Welin Quadrant Davit, 17 Battery Place, New York.
- LYNN, JAMES J., Submarine Signal Co. of Boston, Mass., Port Huron, Mich.

M

- MARTIN, JULIUS, Master Electrician, Equipment Dept., Navy Yard, Brooklyn. N. Y. House Address—445 West 21st St., New York.
- MASON, LEWIS ALBERT, Hull Constructor, American Bridge Co., Ambridge, Pa.
- MASON, NEWTON E., Rear Admiral, U. S. N., Chief of the Bureau of Ordnance, Navy Dept., Washington, D. C.

- MATHEWSON, THOMAS S., Vice-Pres. and Mgr., Marine Machine and Conveying Co., 318 Broadway, New York.
- McEntee, William, Assistant Naval Constructor, U. S. N., Bu C. & R., Navy Dept., Washington, D. C.
- McGowan, Wm. Cullen, Asst. Draughtsman, Dept. of C. & R., Navy Yard, Pensacola, Fla.
- McGuire, James C., Consulting Engineer, 1410 Havemeyer Bldg., 26 Cortlandt St., New York.
- McIlvain, Edward M., President and General Manager, Robins Conveying Belt Co., Park Row Building, New York.
- MCINTYRE, EDWARD, McIntyre & Henderson, Shipbuilders, Foot of Montgomery St., Baltimore, Md.
- McKay, George Theodore, Stearns & McKay, Naval Architects and Yacht Builders, Marblehead, Mass.
- McLean, Thomas C., Captain, U. S. N., care of Navy Dept., Washington, D. C.
- McMillan, Gilbert N., Gorham, N. H.
- McQuesten, Fred, Vice-President, The George McQuesten Co., 27 Kilby St., Boston, Mass.
- MEEK, JOHN E., Care The H. W. Johns-Manville Co., 100 William St., New York.
- MEEK, WENTWORTH W., Naval Architect, P. O. Box 1132, Bath, Me.
- MEIGS, JOHN F.4 Engineer of Ordnance, Bethlehem Steel Co., South Bethlehem, Pa.
- MILLARD, WALTER HENRY, Naval Architect, 17 State St., New York.
- MILLER, JACOB W., President, New England Navigation Co., Pier 19, North River, New York.
- MILLER, THOMAS I., Captain, 424 Second St., Brooklyn, N. Y.
- MILLS, ISAAC BONNEY, Naval Architect, 15 Exchange St., Boston, Mass.

MITCHELL, JOHN, Vessel Owner, Mitchell & Co., Rockefeller Bldg., Cleveland, O.

MOORE, HARRISON B., President, N. Y. Lighterage and Transportation Co., 26 Broadway, New York.

MORGAN, EDWIN D., 100 Broadway, P. O. Box 706, New York,

N

Nebolsine, Commander A. K., Naval Attache, Russian Embassy, Washington, D. C.

New, HARRY STEWART, Draughtsman, 139 Third St., Long Island City, N. Y.

Newberry, Truman II., Assistant Secretary of the Navy, Washington, D. C.

NIBLACK, ALBERT P., Commander "U. S. S. Hartford," Annapolis, Md.

NILES, MARSTON, 154 Nassau St., New York.

Nolan, John J., Fore River Shipbuilding Co., Quincy, Mass.

NORTON, HAROLD F., Newport News S. B. & D. D. Co., P. O. Box 702, Newport News, Va.

റ

O'CONNOR, BERNARD F., 3 Washington Ave., Brooklyn, N. Y.

ORCUTT, CALVIN B., President, Newport News Shipbuilding and Dry Dock Co., I Broadway, New York.

P

PAINE, CECIL E., Engineer, Hyde Windlass Co., Bath, Me. PATTISON, HUGH, Asst. Engineer, Electric Traction, P. R. R., 10 Bridge St., New York.

Pendleton, F. S., Manager, Pendleton Bros., Shipbuilders, 132 Pearl St., New York.

- PERKINS, EDWIN ALAN, Naval Architect and Engineer, 8-10 Bridge St., New York.
- Peterson, Otto L., 1 Broadway, New York.
- Petre, Axel E., General Manager, Midvale Steel Co., Philadelphia, Pa.
- PFISTER, CARLE ERMANUS, Lieutenant, Royal Italian Navy, Naval Attache to the Italian Embassy, Washington, D. C.
- PHILLIPS, WILLIAM H., Manager, Marine Dept., F. W. Devoe & C. T. Reynolds Co., 101 Fulton St., New York.
- PIEK, WILLIAM F., JR., Holland-America Line, Rotterdam. Holland.
- PIERCE, WALTER LOUIS, Secy. and General Manager, Lidgerwood Manfg. Co., 96 Liberty St., New York.
- Powelson, Wilfrid Van Ness, President and General Manager, St. Louis Electric & Power Co., St. Louis, Mo.

R

- RANDLE, WILLIAM GEORGE, Marine Superintendent, New York Shipbuilding Co., Camden, N. J. House—Chester. Pa.
- RAOUF, H., Lieutenant, I. O. N., British P. O., Constantinople, Turkey.
- RAVEN, ANTON A., President, American Bureau Shipping and Atlantic Mutual Insurance Co., 51 Wall St., New York.
- RAYMOND, JAMES RICHARDSON, Raymond Releasing Hook, Room 315, 24 State St., New York.
- REA, SAMUEL, Third Vice-Pres., Pennsylvania R. R., Room 225, Broad St. Station, Philadelphia, Pa.
- RICE, HENRY, Naval Architect and Consulting Engineer, 202 Main St., Buffalo, N. Y.

RICHARDSON, EUGENE M., Vicec-Pres., Sherwin-Williams Co., Cleveland, O.

RICHARDSON, HOLDEN C., Assistant Nava! Constructor, U. S. N., Newport News S. B. and D. D. Co., Newport News, Va.

ROGERS, WALTER H., Draughtsman, Hull Construction, Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa.

Ross, Charles E., Engineer, 17 State St., New York.

ROSSOW, ERNEST FREDERICK, Draughtsman, C. & R. Dept., Navy Yard, Mare Island, 908 York St., Vallejo, Cal. ROWEN, JOHN H., Lieut.-Commander, U. S. N., Naval Station, Cavite, P. I.

S

Sabin, Alvah Horton, 432 Sanford Ave., Flushing, N. Y. Satterlee, Herbert L., Late Lieutenant, U. S. N., 120 Broadway, New York.

Schooler, Clifford Vannice, Asst. Draughtsman, Navy Yard, Norfolk; 511 County St., Portsmouth, Va.

Schreidt, Frank, President, Safety Cylinder Valve Co., Mansfield, O.

Scott, Frank, Crosby Steam Gauge & Valve Co., 16 Dey St., New York. Home—3 Anderson Ave., Port Richmond, S. I.

Sebrel, Uriel, Rear Admiral, U. S. N., Commanding Special Service Squadron, U. S. F. S. Tennessee;

care Navy Dept., Washington, D. C.
Shields, Henry B., Draughtsman, Office of the Superintending Constructor, New York Shipbuilding Co.,

Camden, N. J.
SIMMERS, CLAYTON M., Assistant Naval Constructor, U.
S. N., Navy Yard, Puget Sound, Wash.

SINGER, WALTER H., General Manager, Singer Dock Co., Duluth, Minn. SMITH, ALEXANDER R., 2271 Aqueduct Ave., Bronx Borough. New York.

SMITH, ALFRED G., General Manager, N. Y. and Cuba Mail Steamship Co., 90 Wall St., New York.

SMITH, TOWNSEND J., Hull Draughtsman, T. S. Marvel & Co., Newburgh, N. Y.

SNYDER, HENRY S., Vice-President, Bethlehem Steel Co., South Bethlehem, Pa.

SPEARMAN, EDWARD M., Consulting Engineer and Naval Architect, Knutsford, Cheshire, England.

SPRAGUE, F. J., Technical Director, Sprague Electric Co., 20 Broad St., New York.

STANTON, SAMUEL WARD, Publisher, Nautical Gazette, 156 Fifth Ave., New York.

STARKE, FREDERICK C., 173 25th St., Milwaukee, Wis.

STEPHENS, WILLIAM P., Editor, Lloyds Register of American Yachts, 32d St. and Ave. A, Bayonne, N. J. STOKES, ANSON PHELPS, 100 William St., New York.

т

TAFT, HARRISON, Construction Engineer, 29 West 37th St., New York.

TAMS, J. FREDERIC, Ship Broker and Marine Contractor, 52 Pine St., also 4 Lexington Ave., New York.

THOMAS, S. B., Lieutenant, U. S. N., U. S. S. Kearsarge care Navy Dept., Washington, D. C.

THEESHER, ALFRED ADDISON, Consulting Engineer, 29 Broadway, New York.

TOCH, HENRY M., Manufacturer of Marine Cements and Ship Bottom Paints, 320 Fifth Ave., New York.

TODT, EDWARD GEORGE, Vice-President and General Manager, Gunnell Machine Co., Manitowoc, Wis.

TURNER, LOUIS HORATIO. Surveyor, Bureau Veritas, 401 California St., San Francisco, Cal.

- VANDERBILT, AARON, Vice-President, Wheeler Condenser & Engineering Co., 42 Broadway, New York.
- VAN DUZER, LOUIS S., Lieutenant-Commander, U. S. N., Light-House Inspector, 15th Dist., Victoria Building, St. Louis, Mo.
- VEIT, RICHARD C., Manager, Lighterage Dept., Standard Oil Co., 26 Broadway, New York.
- VREELAND, CHARLES EDWARD, Captain, U. S. N., commanding U. S. S. Kansas care Navy Dept., Washington, D. C.

W

- WALES, CHARLES M., Manager, Cleveland City Forge & Iron Co., 11 Broadway, New York,
- WATERS, GEORGE HENRY, Secretary, F. A. Verdon Co., West New Brighton, S. I., N. Y.
- WEINZ, CHARLES J., Constructor, Heat and Cold Insulation, 538 East 18th St., New York.
- Welles, Roger, Jr., Lieut.-Commander, U. S. N., Fore River Shipbuilding Co., Quincy, Mass.
- WEST, CHARLES CAMERON, Manager, Manitowoc Dry Dock Co., Manitowoc, Wis.
- WHITE, WILLIAM P., Commander, U. S. N., Commercial Bank Building, Cleveland, O.
- WHITE, GEORGE A., Asst. General Manager, Hudson River Day Line. Desbrosses St. Pier, New York.
- WHITON, CHAUNCEY GILBERT, Treasurer, The New Bedford, Martha's Vineyard and Nantucket Steamboat Co., P. O. Box 284, 7 Commercial St., New Bedford, Mass.
- WIERDSMA, JOHN R., Netherlands Steam Navigation Co., Rotterdam, Holland.

WILLIAMS, HENRY, Asst. Naval Constructor, U. S. N., Bu. C and R., Navy Dept., Washington, D. C.

WISE, WILLIAM C., Rear-Admiral, U. S. N. (retired), Navy Dept., Washington, D. C.

WOLVIN, AUGUST B., Gen. Mgr., American S. S. Co., 303 Board of Trade, Duluth, Minn.

Wood, David, Draughtsman, C. & R. Dept., Navy Yard, New York.

Wood, Henry A. Wise, Mechanical Engineer, 1 Madison Ave., New York.

Wood, Howard, 1016 Spruce St., Philadelphia, Pa., or Conshohocken, Pa.

WRIGHT, ROBERT KEMP, Port of Spain, Trinidad, B. W. I. WRIGHT, WILLIAM LLOYD, Draughtsman, Bureau of C. & R., Navy Dept., Washington, D. C. House—1908 G St. N. W.

\mathbf{z}

ZETTERMAN, AXEL E., Marine Engine and Boiler Draughtsman, Fore River Shipbuilding Co., Quincy, Mass.



JUNIORS

A

ANDERSON, ROBERT EARLE, C. E., Draughtsman, Bureau of C. & R., Navy Dept., Washington, D. C.

\mathbf{B}

- BAILEY, DANIEL, Ship Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.
- BAILEY, ROBERT W., Ship Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.
- BAGGER, FRANK E., Draughtsman, Tietjen & Lang Dry Dock Co., Hoboken, N. J.
 - House—Fort Hamilton Ave. and 70th St., Brooklyn, N. Y.
- BAUM, ARTHUR ELMO, Draughtsman, Hull Dept., Bath Iron Works, 95 Union St., Bath, Me.
- Berliner, Richard W., Hedden Construction Co., 1
 Madison Ave., New York.
 Mail address—174 West 79th St., New York.
- BINLEY, Wm., Jr., Leading Ship Draughtsman, Navy Yard, New York.
- Bowen, Almon F., Draughtsman, Newport News S. B. & D. D. Co., 224 49th St., Newport News, Va.
- BOYD, STEPHEN B., Ship Draughtsman, C. & R. Dept., Navy Yard, Boston, 20 Holden St., Malden, Mass.
- Bragg, Ross W., Draughtsman, N. Y. Shipbuilding Co., Camden, N. Y.
- Bretteville, Alexander DE, Manager, Main St. Iron Works, 163 Main St., San Francisco, Cal.

- BRINER, EMIL AMANDUS, M. E., 639 Bourse Building, Philadelphia, Pa.
- Brooks, Louis C., Master Electrician, C. & R. Dept., Navy Yard, Boston, Mass.
- Burkhard, John C., Student Naval Architecture, Sibley College, Ithaca, N. Y.

C

- CALLAHAN, CONSTANTINE D., Yacht Designer, San Pedro, Cal.
- Callis Daniel M., Estimator, Scientific Department, Maryland Steel Co., Sparrow's Point, Md.
- Caswell, W. B., Draughtsman, 253 West 127th St., New York.
- CLARK, REUBEN B., Manager, E. H. Godshalk & Co., ft. Cooper St., Camden, N. J.
- CLARY, JOSEPH W., Draughtsman, Bureau of C. & R., Navy Dept., Washington, D. C.
- COLBY, HALDWELL S., Mechanical Draughtsman, C. D. Mosher, 1 Broadway, New York.
- COOK, FAYETTE A., Student Naval Architecture, Sibley College, Ithaca, N. Y.
- CRAIN, JOHN J., Draughtsman, 36 Edison Park, Quincy, Mass.
- CRANE, FRANK H., Supt., Theo. Crane's Sons Dry Dock & Shipyard, Erie Basin.
 - House-205 Garfield Place, Brooklyn, N. Y.
- CROSBY, RALPH W., of Daniel Crosby & Son, Osterville, Mass.
- CURTIS, ARTHUR V., Draughtsman, C. & R. Dept., Navy Yard, Washington, D. C.
- CUTLER, EDWARD OSGOOD, Draughtsman, Office of Superintendent of Construction, Bath Iron Works, Bath, Me.

DAMON, EDWARD ORNE, JR., Superintendent of Construction, U. S. Light-House Establishment, Washington, D. C.

DAVIS, MATTHEWS ERASTUS, Asst. Foreman of Ships, New York Shipbuilding Co., Camden, N. J. House—128 So. Broad St., Woodbury, N. J.

DAVIS, OLIVER M., 91 Miami Ave., Detroit, Mich.

DEGRAW, HAROLD MASON, Draughtsman, Hull Drawing Room. Fore River S. B. Co., Quincy, Mass.

DIMM, WAYNE T., Assistant Chief Draftsman, Engineering Estimating Dept., Newport News S. B. and D. D. Co., Newport News, Va.

DOUGHERTY, HUGH, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

E

ENGERDT, JOHN ARNHOLD, Inspector Steam Turbines, Inspection and Testing Dept., Westinghouse Machine Co., P. O. Box 176, Ambridge, Pa.

ELLIS, WALTER L., Draughtsman, Hyde Windlass Co., Bath. Me.

ERISMANN, MARTIN C., Draughtsman, Hull, Fore River S. B. Co., Quincy, Mass.

Evans, John Lancaster, Ship Draughtsman, Bath Iron Works, 212 Centre St., Bath, Me.

EWEN, ALBERT E., Surveyor, International Automatic Sprinkler Co., 43 Exchange Place, New York.

F

FERNALD, BENJAMIN G., Sales Manager, Northern Electric Mfg. Co., Madison, Wis.

FILS, ERNEST, Draughtsman, John N. Robbins Co., Erie Basin, Brooklyn, N. Y.

FINKENAUR, WM. M., Engine Draughtsman, Burlee Dry Dock Co., Port Richmond, S. I.

FISHER, LEE DAVID, Chief Engineer, Fisher Construction Co., Joliet, Ill.

FRENCH, FRANCIS J., Ship Draughtsman, C. & R. Dept., Naval Station, New Orleans, La.

FRIEBLE, JOHN F., Draughtsman, 272 W. 141st St., New York.

G

GRIESHABER, HUGO EUGENE, Chief Hull Draughtsman, Electric Boat Co., Quincy, Mass.

H

HACK, HENRY J., Draughtsman, Camden Iron Works, Camden, N. J.

HALL, FRANCIS GRANGER, JR., Wade Building, Cleveland, Ohio.

HAMMOND, JAY D., Draughtsman, 156 Richmond Ave., Port Richmond, N. Y.

HAUPT, JOHN, 198th St., Bedford Park, N. Y.

HERRICK, DAYTON E., Draftsman, T. S. Marvel & Co., Newburgh, N. Y.

Hewins, Lyman Foster, Draughtsman, C. &. R. Dept., Navy Yard., Washington, D. C.

HIBBARD, HARRY LYMAN, Electrical Engineer, Cutler-Hammer Mfg. Co., Wilwaukee, Wis.

Hunnewell, Fred. A., Chief Draughtsman, Office of Suptg. Constructor, N. Y. Shipbuilding Co., Camden, N. J.

HUNT, HERMAN REYNOLDS, Instructor of Naval Architecture, Mass. Inst. of Tech., Boston, Mass.

Hussey, James W., Naval Architect, 1130 Walnut St., Philadelphia, Pa.

- JENNINGS, ALFRED C., Hull Draughtsman, Harlan & Hollingsworth Co., Wilmington, Del.
- Jonson, Herman, Consulting and Contracting Engineer, 79 E. 130th St., New York.

h

١

JOHNSON, EADS, Contracting Engineer, James Shewan & Sons, Ft. E. Houston St., New York.

K

- KEENAN, WALTER COOK, Draughtsman, 1034 Milan St., New Orleans, La.
- KENNEY, LEWIS H., Draughtsman, in charge S. E. Dept., Navy Yard, League Island, Pa.
- KIMBALL, WALTER EVERAND, Asst. Draughtsman, U. S. N., Fore River Shipbuilding Co., Quincy; No. 1 Robin Hood St., Roxbury, Mass.
- Koon, Sidney Graves, Editor Marine Engineering, 17
 Battery Place, New York.
- KREER, JOHN G., J. T. Ryerson & Son, 18 Milwaukee Ave., Chicago, Ill.

L

- Lewis, Arthur Schultz, M. E., care J. W. Masury & Co., 50 Jay St., Brooklyn, N. Y.
- LEITCH, ALBERT CLARK, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.
- LESLEY, EVERETT P., Instructor in Mechanical Engineering, Stanford University, Cal.
- LUDERS, ALFRED E., Naval Architect, Electric Launch Co., Bayonne, N. J.

- LUEHRS, DANIEL MICHAEL, Chief Engineer, McCreery Engineering Co., Cleveland, Ohio.
- LYNX, HARRY A. F., Draughtsman, C. & R. Dept., Navy Yard, N. Y. House—214 East 75th St., N. Y.

M

MARTIN, GILBERT DARLING, Marine Mfg. & Supply Co., 207 Neilson St., New Brunswick, N. J.

McComb, Samuel Deems, Surveyor and Adjuster, Chas. M. Hall & Co., 60 Wall St., New York. Residence—47 Lafayette Ave., Port Richmond, N. Y.

MEEKER, H. L., Draughtsman, C. & R. Dept., Navy Yard. House-06 Etna St., Brooklyn, N. Y.

MERRILL, AMBROSE MOODY, Draughtsman, C. & R. Dept., Navy Yard, New York.

MITCHELL, LELAND R., Marine Engine Draughtsman, Bath Iron Works, 476 Middle St., Bath, Me.

MORRISON, CLARENCE LEE, Fore River Shipbuilding Co., Quincy, Mass.

N

NEWELL, WILLIAM STARK, Bath Iron Works, Bath, Me.

NORTON, WILLIAM J., General Manager, Federal Electric Co., 317 W. 42nd St., New York.

0

O'Donnell, Charles F., Boatbuilder, C. & R. Dept., Navy Yard.

House-56 Russell St., Brooklyn, N. Y.

OSBORN, EDWARD B., Foreman with W. R. Osborn, Croton-on-Hudson, N. Y.

OVERMAN, AUSTIN EVERETT, 429 Penn St., Camden, N. J.

POSTEL, FRITZ A., Student Naval Architecture, Sibley College, Ithaca, N. Y.

POTTER, JOSEPH S., Hull Draughtsman, Gas Engine & Power Co., and Charles L. Seabury Co., Consolidated, Morris Heights, N. Y.

R

READ, WALTER AUGUSTINE, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

RICE, WINTHROP M., Draughtsman, Electric Launch Co., Bayonne, N. J.

ROBERTS, ARTHUR O., 7 Piedmont St., Salem, Mass.

S

SHERIDAN, RICHARD BRINSLEY, Chief Sales Engineer, Brown Hoisting Machinery Co., St. Clair St., Cleveland, Ohio.

SIMPSON, DWIGHT S., Powers-Simpson Co., Powers, Minn.

SIMPSON, ROBERT C., Naval Architect, 70 Long Wharf, Boston, Mass.

SMITH, GRANVILLE, Hull Draughtsmaan, 3121 14th St. N. W., Washington, D. C.

SMITH, JOSEPH DICKINSON CLAIR, Hartington, Neb.

STAPLES, HORACE A., Superintendent, Tube Mill, Bridgeport Brass Co., 992 Noble Ave., Bridgeport, Conn.

STEVENS, EDWIN A., JR., 15 William St., New York.

Stewart, Lee R., in charge of Mold Loft, New York Shipbuilding Co., Camden, N. J.

Stone, Preston S., Office of Suptg. Constructor, Moran Brothers Co., Seattle, Wash.

STUART, DONALD, 85 Chambers St., New York.

- Sullivan, John F., Asst. Engineer, Penn. R. R. Tunnels, Weehawken, N. J.; 609 West 137th St., New York.
- Swasey, A. Loring, of Swasey, Raymond & Page, Naval Architects and Engineers, Colonial Building, Boston, Mass.

Т

TAPPEN, ALEXANDER B., Vice-President, Consolidated Water Co., 234 Genesee St., Utica, N. Y.

THURSTON, PERRY K., Draughtsman, Bu. of S. E., Navy Dept., Washington, D. C.

THUNBERG, ERNST, JR., Superintendent of Gun Works, Bafors-Guttspong Co., Bafors, Sweden.

Towle, Howard C., Standard Oil Co., 26 Broadway, New York.

TURNER, CHARLES C., Hull Draughtsman, George Lawley & Sons Corp., Boston, Mass.

House—10 Charles St., Quincy, Mass.

U

UZELMEIER, WILLIAM, Marine Draughtsman, Wm. Cramp & Sons Co., Philadelphia, Pa.
House—7238 Bryan St., Philadelphia, Pa.

w

- WALLACE, WILLIAM L., JR., Draftsman, Manitowoc Dry Dock Co., 412 North Park St., Manitowoc, Wis.
- Wassilier, Wassily W., 1521 North 6th St., Philadelphia, Pa.
- WATTS, J. MURRAY, Yacht Designer and Builder, 808 Brown Bros. Building, 4th and Chestnut Sts., Philadelphia, Pa.

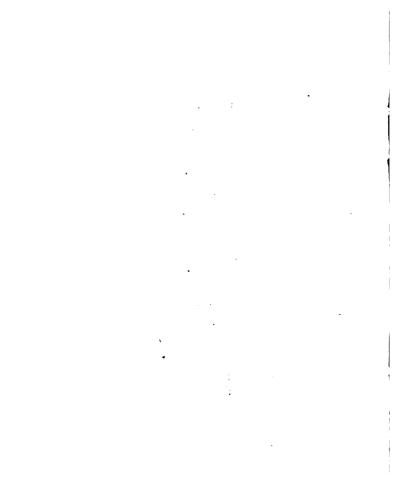
- Webb, Thomas E., Jr., Hull Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y. House—218 82d St.
- WHITAKER, FRANK B., 1421 U St., N. W., Washington, D. C.
- WHITE, WARREN A., Draughtsman, Fore River S. B. Co., Quincy, Mass.
- WHITE, WILLIAM WESLEY, Draughtsman, 1001 Union Trust Building, Baltimore, Md.
 - WHITEHOUSE, FREDERICK CHARLES, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.
 - WHITTELSEY, DANIEL I., Whittelsey and Whitaker, II Broadway, New York City.
 - WIGHT, ROGER WILLARD, 290 Clinton Ave., Brooklyn, N. Y.
- WRIGHT, HENRY C., JR., Hull Draughtsman, Bath Iron Works, Bath, Me.

Y

- YEOMANS, CLYDE, Cor. Mott & Hollywood Aves., Far Rockaway, N. Y.
- Young, William J. J., Superintending Constructors office, Fore River S. B. Co., Quincy, Mass.

 Address—10 Sewall St., Dorchester, Mass.



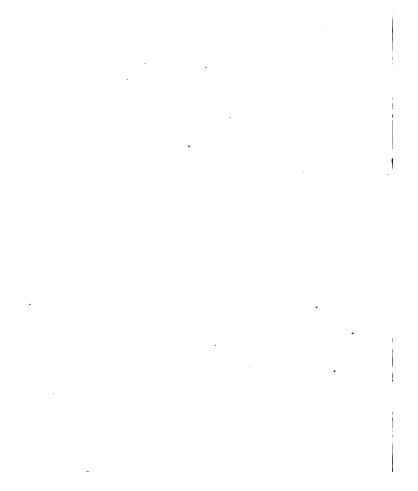


CONSTITUTION AND BY-LAWS

OF THE -

Naval Architects and

Marine Engineers



CONSTITUTION AND BY-LAWS

ARTICLE I.

Name and Object.

- I. The name of the Association shall be, "The Society of Naval Architects and Marine Engineers."
- 2. Its object shall be the promotion of the art of shipbuilding, commercial and naval.
- 3. In furtherance of this object, annual meetings shall be held for the reading and discussion of appropriate papers and interchange of professional ideas, thus making it possible to combine the results of experience and research on the part of shipbuilders, marine engineers, naval officers, yachtsmen, and those skilled in producing the material from which ships are built and equipped.

ARTICLE II.

Membership.

1. The Society shall consist of Members, Associates, Juniors, Honorary Members and Honorary Associates.

- 2. Members.—(1) The class of Members shall consist exclusively of Naval Architects, Marine and Mechanical Engineers, including Professors of Naval Architecture or Mechanical Engineering in colleges of established reputation.
- (2) A Candidate for this class must not be less than twenty-five years of age and comply with the following regulations: He shall submit to the Council a statement showing that he has been engaged in the practice of his profession, in a responsible capacity, for at least three years, and setting forth the grounds upon which he bases his claim to membership. This statement shall be signed by three members, who shall certify to their personal knowledge of the candidate and approval of his statement.
- (3) In the case of persons not American citizens, the signatures of three members shall be required in confirmation of their personal knowledge of the candidate's scientific attainments.
- (4) If three-fourths of the members of the Council present are in favor of the admission of the candidate his name shall be submitted to the members of the Society at the next meeting; the voting to be by ballot, should a ballot be demanded.
- 3. Associates.—(1) The class of Associates shall consist of all persons who, by profession,

occupation, or scientific attainments, are qualified to discuss the qualities of a ship.

- (2) Candidates for this class shall submit to the Council a written statement of their qualifications for membership. If considered by three-fourths of the Council present duly qualified for associate membership their names shall be submitted to the Society at the next meeting, to be voted upon by the Members and Associates; voting to be by ballot, should a ballot be demanded.
- 4. The proportion of favorable votes for deciding the election of Members and Associates shall be at least four-fifths of the number recorded.
- 5. Juniors.—(1) The class of Juniors shall consist of graduates of technical schools of established reputation, or persons who have had not less than two years' practical experience in marine engine works or shipyards.
- (2) Candidates must be at least eighteen years of age and certify their intention to continue in the profession and become naval architects and marine engineers.
- (3) Juniors shall be eligible for transfer to the class of Members after fulfilling the necessary conditions.
 - (4) The admission of Juniors shall be by a

favorable vote of three-fourths of the members of the Council present.

- (5) Juniors shall have no voice in the government of the Society or admission of members.
- 6. Honorary Members and Honorary Associates.—The Council may elect Honorary Members and Honorary Associates, the total number not to exceed twenty-five. They shall be persons of acknowledged eminence in their profession upon whom the Council may see fit to confer an honorary distinction.

ARTICLE III.

1. The entrance fees, payable on admission to the Society, shall be as follows:

Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates, no fees.

2. The annual dues shall be as follows:

Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates. no dues.

3. A member transferred from one grade to another shall pay the difference between the entrance fees of the two grades, and his annual dues shall be those of the grade to which transferred.

- 4. The annual contributions shall be payable in advance on the first day of January. The Secretary shall notify each member of the amount due for the ensuing year at the time of giving notice for the annual meeting. On election each member shall pay his entrance fee and annual dues for the current year and be entitled to rereive the proceedings of the annual meeting of the year during which he is elected.
- 5. Members and Associates can compound for all future dues and become Life Members or Life Associates by making a single payment of two hundred dollars and signing an agreement to conform to any future amendments to the Constitution and By-Laws.
- 6. Members are entitled to no return fees upon severing their connection with the Society.
- 7. Any member whose dues are more than three months in arrears shall be notified by the Secretary. Should his dues become six months in arrears he shall be again notified by the Secretary and his rights as a member suspended. Should his dues become one year in arrears the delinquent member shall forfeit his membership in the Society unless the Council may deem it expedient to extend the time of payment.
- 8. The Council may, in its discretion, temporarily suspend the annual payment of dues by any

member whose circumstances have become such as to make such payment impossible, and may, under similar circumstances, remit the whole or part of dues in arrears.

- 9. No name shall be entered on the rolls as Member, Associate or Junior, nor shall the privileges of membership be enjoyed until all dues shall have been paid; if the payment be delayed for more than six months from the date of election, the same shall be void unless the Council otherwise direct.
- 10. Should the expulsion of any member be judged expedient by five or more members, they must draw up and sign a proposal requesting such expulsion, delivering the same to the Secretary, to be laid before the Council.
- (2) If the Council do not find reason to concur in the proposal, no entry thereof shall appear in the minutes, nor shall any public discussion thereon be permitted.
- (3) If, however, the Council find the charges contained in the proposal for expulsion substantiated, the accused member shall be notified and given an opportunity to resign. If he avails himself of this privilege, no entry shall be made on the minutes nor public discussion of the case be permitted. But if he declines to resign and offers no satisfactory explanation of the charge,

the whole case shall be submitted to a special meeting of the Society.

(4) If two-thirds of the members at this special meeting (providing there be not less than twenty persons) vote for expulsion, the Chairman of the meeting shall cause the accused to be expelled from the Society, and direct the Secretary to notify the accused of this action.

ARTICLE IV.

Officers.

- 1. The officers of the Society shall consist of a President, Past Presidents, twelve Vice-Presidents, twenty-four Members of Council, and a Secretary and Treasurer.
- 2. Both Members and Associates are eligible for the offices of President, Vice-President and Members of Council, but three-fourths of the Council shall be Members.
- 3. Prior to the date of the annual meeting of the Society of the year with which the term of the President expires, the Council shall nominate a candidate for the office of President, whose name shall be presented to the Society for election at the annual meeting. Any other candidate whose nomination, signed by at least sixty Members and Associates, shall have been submitted to the Secretary prior to the annual meeting shall

also be presented. The candidate receiving the highest number of votes shall be the President for the ensuing three years. The first President under this rule shall be elected at the annual meeting in 1906, and his term of office shall begin January 1st, 1907. The President shall not be eligible for election as his own successor.

- 4. The term of office of the Vice-Presidents shall be six years. Prior to the annual meeting in 1906 the Executive Committee shall by lot divide the present list of Vice-Presidents into six classes, so that the term of two of their number shall expire at the end of 1906, and two others at the end of 1907, and so on to the year 1911. The Vice-Presidents to fill the vacancies occurring each year in any class shall be elected by the Council from their own membership. Retiring Vice-Presidents shall be eligible for re-election.
- 5. The term of office of the Members of Council shall be three years. Prior to the annual meeting in 1906, the Executive Committee shall by lot divide the present list of Members of Council into three classes, each class consisting, as near as may be, of six Members and two Associates. The terms of office of the three classes shall expire at the end of the years 1906, 1907 and 1908 respectively. Retiring Members and Associates shall be eligible for re-election. Prior to

September 1st of each year, the Executive Committee shall prepare voting lists to fill the places of retiring Members and Associates, Members of the Council. The list shall contain the names of at least twelve Members and at least four Associates as candidates for the vacancies. The lists shall contain the names of all retiring Members and Associates who shall not have declined reelection, and of all candidates who shall have been nominated in writing by not less than twenty members in the case of Members, and not less than twenty members and associates in the case of Associates. No nominations received by the Secretary after August 15th shall be considered. Should such nominations not be sufficient in number to fill up lists of at least twelve Members and four Associates as candidates, the Executive Committee shall add sufficient names to fill out these numbers. The voting lists shall be mailed as soon as practicable after September 1st of each year to Members and Associates. Each Member may vote for not more than six Members and two Associates for the Council, and each Associate vote for not more than two Associates. The ballots shall be returned by mail to the Secretary and canvassed at the annual meeting. The six members receiving the highest votes shall be declared elected Members of Council, and the two associates receiving the highest votes shall be declared elected Associate Members of Council, for the term of three years.

- 6. A vacancy in the office of President shall be filled by ballot by the Council from the list of Vice-Presidents until the end of the year in which it occurs. At the annual meeting of that year a new President shall be elected for three years in the manner prescribed in paragraph 3. A vacancy in the office of Members of Council shall be filled by the Council for the unexpired portion of the term of the Member or Associate causing the vacancy.
- 7. The Presidents, Past Presidents and Vice-Presidents shall be ex-officio members of Council.
- 8. The Council may hold meetings subject to the call of the President, as often as the interests of the Society may demand.
- 9. At all meetings of Council five members shall constitute a quorum.
- 10. The Secretary and Treasurer shall be elected annually by the Council, but may be removed at any time by a majority vote of the Council after due notice has been given.
- 11. The Secretary must be a member of the Society.

ARTICLE V.

Management.

- 1. (1) The President shall have general supervision over the affairs of the Society, appoint special committees, and preside at the annual general meetings. He shall be ex-officio member of all committees.
- (2) In the absence of the President, the Vice-Presidents, in the order of seniority, shall preside and perform all the duties of the President.
- 2. The direct management of the Society shall be vested in an Executive Committee composed of five members of Council, elected annually by the Council, the President and Secretary of the Society being ex-officio members of the Committee. At least three of the five elective members of the Committee shall be Members of the Society.
- 3. The Executive Committee shall manage the affairs of the Society in conformity with the laws under which it is incorporated and the provisions of this Constitution. It shall direct the investment and care of the funds of the Society; make appropriations for specific purposes; arrange for the reading and publication of professional papers under such regulations as the Council may from time to time prescribe; take measures to advance

the interests of the Society, and generally direct its affairs.

- 4. The Executive Committee shall make an annual report to the Society, transmitting the report of the Secretary and Treasurer, and of any special committee which may have been ordered.
- 5. (1) The Secretary shall be the Executive Officer of the Society under the immediate direction of the President and the Executive Committee.
- (2) He shall prepare the business for the annual meetings and record the proceedings thereof.
- (3) He shall be responsible for all expenditures and certify the accuracy of all bills or vouchers upon which money has been paid, and he shall conduct the correspondence of the Society and keep full records of the same.
- 6. The Treasurer shall see that all money due the Society is collected and carefully invested in such manner as the Executive Committee may direct. If considered advisable by the Council, the duties of Treasurer may be performed by the Secretary.
- 7. The accounts of the Secretary and Treasurer shall be audited annually by a special committee of three members of Council, appointed by the President of the Society.

ARTICLE VI.

Meetings.

- r. There shall be at least one annual general meeting of the Society for the reading and discussion of professional papers, election of officers for the ensuing year, and transaction of such other business as may be brought before it. The time and location of this meeting shall be determined by the Council at least three months prior to the date fixed.
- 2. Special meetings may be called by the Executive Committee at the request of twenty members, which request shall state the purpose of the meeting. The call for such meetings shall be issued ten days in advance, and shall state the purpose thereof. At these meetings thirty members shall constitute a quorum.
- 3. The Society may adopt, from time to time, such rules as it may think proper for the order of business at its meetings.
- 4. Special meetings of the Executive Committee may be held at any time, subject to the call of the Chairman; and four members shall constitute a quorum for the transaction of any business that may be properly brought before the Committee.

ARTICLE VII.

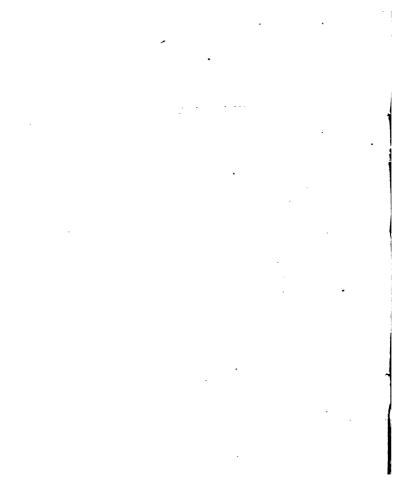
Amendments.

I. Proposed amendments to the Constitution must be reduced to writing and signed by not less than ten members. They shall be forwarded to the Secretary at least ten days before the annual general meeting, and shall be immediately forwarded to the Council for its consideration. If a majority of the Council approve the proposed amendment it shall be presented to the Society at the next ensuing general meeting for discussion; if approved by two-thirds of the members present, voting by ballot, if a ballot be demanded, it shall be adopted.



Soicety of Naval Architects and Marine Engineers *FORM OF PROPOSAL OF MEMBER

Name in full						•
Date of Birth						
Nationality						
Post-Office Address						
Date of Application		• • • • •	• • • • •		• • • • • • • • •	٠
Professional position						
held, giving name	and .	• • • • •	• • • • •	· • • • • •	• • • • • • • •	•
address of institut						
firm or shipyard. Brief statement of		• • • • •	• • • • •	• • • • • •	• • • • • • • • •	٠
technical train-						
ing and profes-						
sional experi-	• • • • •	• • • • •	• • • • •	• • • • • •	• • • • • • • •	•
ence, strict						
attention being	• • • • • •		• • • • •			•
laws governing						
applications for						
admission to						
membership.	• • • • •		• • • • •			٠
[See Constitution.]						
I certify that the a						÷
elected, pledge myself	to shid	a bu	the or	netitut	ion and h	7-
laws as at present in	force (or he	reafte	r estab	ished and	í.
in the event of my co						
return for cancellatio						
the shove society	-				-	
Signature of ap	plicant		• • • • •			
					190	
Having examined	the ab	ove s	statem	ent. w	e. the ur	1-
dersigned, signify our	r appro	val 1	thereo	f and	recommen	d
Mr		for	elect	ion as	a Member	r.
Signature of three	(• • • •			• • • • • • • •	•
members.	}	• • • • •	• • • • •	• • • • • •	• • • • • • • • •	٠
*Same form for A	eenciat		d 10	niore	evcent the	÷
the approval of only	wo me	mbers	ia ju	require	d for Asso)-
the approval of only t	or Juni	ors.				•



TRANSACTIONS of the SOCIETY OF Naval Architects and

Marine Engineers

TABLE OF CONTENTS OF VOLUMES I TO XV



VOLUME I. (1893)

288 Pages. 60 Plates and Drawings.

PAPERS.

- I. "Evolution of the Atlantic Greyhound."

 Chas. H. Cramp, Esq., Pres., Wm. Cramp & Sons' Ship and Engine Building Co.
- "Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements."
 JOSEPH J. WOODWARD, Naval Constr., U. S. N.
- "United States Treasury Rules for the Inspection of Machinery and Boilers."
 JAMES T. BOYD, Esq.
- "Production in the United States of Heavy Steel Engine, Gun and Armor Forgings." RUSSELL W. DAVENPORT, Esq.
- 5. "Coal Bunkers and Coaling Ship."

 ALBERT P. NIBLACE, Lieutenant, U. S. N.
- 6. "Steel Ships of the United States Navy."

 THEODORE D. WILSON, Ex-Chief Constructor,
 U. S. N.
- "Notes on the Machinery of the New Vessels
 of the United States Navy."
 GEORGE W. MELVILLE, Engineer-in-Chief, U. S. N.

8. "Comparative Performances of American and Foreign Freighting Ships—Our Superiority."

WM. W. BATES, Esq., late Commissioner of Navigation.

"Some Thoughts on the Design of New York Ferry Boats."

Col. EDWIN A. STEVENS, President, Hoboken Ferries.

- 10. "The Law of Frictional Resistance." PROF. W. F. DURAND, Cornell University.
- "Steam Yachts as Naval Auxiliaries in Time of War."
 WM. GARDNER, Esq.
- 12. "The Wetted Surface of Ships."

 DAVID W. TAYLOR, Naval Constructor, U. S. N.
- 13. "The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels."
 JAMES O'NEILL, Esq.
- 14. "The Development of Shipbuilding on the Great Lakes." , JNO. F. PANKHURST, Esq.

VOLUME II. (1894)

346 Pages. 69 Plates and Drawings.

PAPERS.

- I. "Some Suggestions of Professional Experience in Connection with the Naval Construction of the Last Ten Years—1884-1894."
 RICHARD W. MEADE, Rear Admiral, U. S. N.
- "The Use of Small Models for the Determination of Curves of Stability."
 Mon. E. Bertin, Director of the French Government School of Naval Design.
- "Some Obstacles to Shipbuilding and Owning in this Country."
 GEO. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco, Cal.
- "Electricity on Shipboard—Its Present Position and Future Development."
 S. Dana Greene, Esq.
- "Cellulose and Its Application to Warships."
 Mon. E. Cheneau, Philadelphia, Pa.
- "The U. S. Triple-Screw Cruisers 'Columbia' and 'Minneapolis'."
 GEORGE W. MELVILLE, Engineer-in-Chief, U. S. N.

- "A Dynamic Steam Engine Indicator Tester."
 Professor Cecil H. Peabody, and Asst. Professor
 E. F. Miller, Massachusetts Institute of Technology.
- 8. "Experience Gained with our New Steel
 Ships as Regards Care and Preservation."
 PHILIP HICHBORN, Chief Constructor, U. S. N.
- "Present Status of Face-Haidened Armor."
 W. T. Sampson, Captain and Chief of Ordnance,
 U. S. N.
- 10. "Hydraulic Power for Warships." ALBERT W. STAHL, Naval Constructor, U. S. N.
- II. "Notes on Launching."
 WILLIAM J. BAXTER, Naval Constructor, U. S. N.
- "Yachts in England and America."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- "Accessibility and Circulation of Water-Tube Boilers."

 D. Davis, Esq., M. E. President Davis-Farrar Co.
- T4 "Recent Light-draught Gunboats of U. S. N."
 J. J. WOODWARD, Naval Constructor, U. S. N.
- 15. "An Approximate Formula for the Wetted Surface of Ships." Profs. W. F. DURAND and GEO. R. McDermott, Cornell University.

VOLUME III. (1895)

300 Pages. 57 Plates and Drawings.

PAPERS.

- "American Maritime Development."
 CAPT. HENRY C. TAYLOR, U. S. N., President, Naval War College.
- "The Centreboard—Its Influence on Design; Its Value and Proper Use."
 WM. P. STEPHENS. ESO.

ø'

- 3. "Rudder Experiments—U. S. S. 'Monterey'."

 Elliott Snow, Asst. Naval Constructor, U. S. N.
- "Aluminum—Its Alloys and Their Use in Ship Construction."
 J. C. McGuire, Esq., C. E.
- 5. "Methods and Forms for Certain Ship Calculations."

 D. W. TAYLOR, Naval Constructor, U. S. N.
- "The Number of Longitudinal Intervals in Ship Computation, as Affecting the Accuracy of Integration for Displacement," and True Wetted Surface."
 Prof. W. F. DURAND, Cornell University.
- "Recent Designs for Vessels for the U. S. Navy."
 Philip Hichborn, Chief Constructor, U. S. N.
- 8. "Tactical Considerations Involved in War Ship Design."

ALBERT P. NIBLACK, Lieutenant, U. S. N.

- "Engineering Research in the Navy." Prof. Wm. S. ALDRICH, University of West Virginia.
- "Performance of the Twin-Screw Steamer 'City of Lowell.'" Prof. JAMES E. DENTON. Stevens Institute of Technology.
- "The Ventilation of Ships." F. B. Dowst, Esq., M. E.
- "An Experimental Test of the Armored Side of the U.S.S. 'Iowa.'" ALBERT W. STAHL, Naval Constructor, U. S. N.

VOLUME IV. (1896)

200 Pages, 58 Plates and Drawings.

PAPERS.

- "Test of an Experimental Turret of the U. S. Battleship 'Massachusetts.'" Commodore W. T. SAMPSON, U. S. N., Chief of Bureau of Ordnance, Navy Department, Washington, D. C.
- "Steel Canal Boats." LEWIS NIXON, Manager, Crescent Shipyard, Elizabeth, N. J.
- "Naval Practice in Ship Rivets and Rivet-3. ing."

4. "American Fire-Boats."

H. DEB. PARSONS, Marine Engineer.

1

- "Corn-Pith Cellulose."
 Henry W. Cramp, Vice-President, Wm. Cramp
 & Sons, Philadelphia, Pa.
- 6. "The New Battle-Ships."

 Chief Constructor Philip Hichborn, U. S. N.
- 7. "Speed Trials of a Screw-Propelled Ferry-Boat."
 - F. L. DuBosque, Engineer, Floating Equipment, Pennsylvania Railroad.
- 8. "Hydraulic Sheers for Lifting One Hundred and Twenty-Five Tons."

FRANK B. KING, Marine Engineer and Naval Architect.

- "A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability."
 Hugo Hammar, Naval Architect.
- "Stability of a Ship in Damaged Condition."
 Prof. James Swan, Massachusetts Institute of Technology.
- II. "Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battle-Ships."
 Assistant Naval Constructor T. F. RUHM, U.S.N.
- 12. "Screw Propellers."

 Prof. GEO. R. McDermott, Cornell University.

VOLUME V. (1897)

247 Pages. 67 Plates and Drawings.

PAPERS.

- I. "Water-Tight Bulkhead Doors the 'Long Arm' System on the U. S. S. 'Chicago.'"

 WM. BARRUM COWLES, Esq.
- "Regulations for Loading Vessels."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- "Torpedo Boat Design."
 Asst. Naval Constructor, H. G. GILLMOR, U.S.N.
- 4. "The Commerce of the Great Lakes."
 C. E. Wheeler, Esq.
- 5. "Progressive Trials of the 'Guardian.'"
 Prof. C. H. PRABIDY, Mass. Institute Technology.
- "An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers." Preliminary paper.
 Prof. W. F. DURAND, Cornell University.
- 7. "Some Notes on the Speed Trials and Experience in Commission of our New Battleships."

 Chief Constructor Philip Hichborn, U. S. N.
- "Use of Water Ballast for Colliers in the Pacific Coast Trade." Hugo P. Frear, Esq., Naval Architect.
- 9. "Estimated Weights of Machinery."
 Prof. Geo. R. McDermott, Cornell University.

- 10. "Navy Yard Expenses."
 Naval Constructor W. J. BAXTER, U. S. N.
- 11. "Pneumatic Steering Gear—as Applied to the U. S. Monitor 'Terror.'"
 H. A. SPILLER, Esq.

VOLUME VI. (1898)

217 Pages. 120 Plates and Drawings.

PAPERS.

- I. "The Standard Navy Boats."
 ARTHUR B. CASSIDY, Esq.
- 2. "Bilge Keels and Rolling Experiments— U. S. 'Oregon.'" Asst. Naval Constructor LAWRENCE SPEAR, U. S. N.
- "Portable Pneumatic Riveters in Shipbuilding."
 W. I. Babcock, Esq., Manager, Chicago Shipbuilding Co.
- 4. "Torpedo Boat Destroyers for Sea Service, with Special Reference to the Conditions that Prevail on the Pacific Coast."

G. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco.

Topical Discussion-

The Utility of Torpedo Boats, and has the Sub-Marine Boat a Place?

5. "Steam Economy Test of a Unique Form of Feed Pump."
F. M. WHEELER, Esq.

- "The Steam Yacht as a Naval Auxiliary."
 WILLIAM P. STEPHENS, Esq.
- "Designs of the New Vessels for the U. S. Navy."
 Chief Constructor Philip Highborn. U. S. N.
- 8. "Methods of Securing Water-Tight Work."
 Asst. Naval Constructor H. G. SMITH, U. S. N.
- 9. "Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms."

 Naval Constructor J. J. WOODWARD, U. S. N.
- "An Electrically Operated 150-Ton Revolving Derrick."
 WALTER A. POST, Esq., Manager, Newport News Shipbuilding and Dry Dock Co.
- 11. "Stability of a Battleship under Damaged Conditions."

Topical Discussion—
Prof. CECIL H. PEABODY, Massachusetts Institute
of Technology.

- Ist.—Under the circumstances of a blockade at Santiago, which was the more economical method of maintaining the boilers in readiness for immediate action banking the fires or keeping them spread but very thin?
- 2d.—As a result of experience on the blockade, what particular points about the machinery were most likely to give trouble, and what could be done to prevent a recurrence of such trouble?

VOLUME VII. (1899)

285 Pages. 105 Plates and Drawings.

PAPERS.

- I. "Coaling Vessels at Sea."

 SPENCER MILLER, Esq.
- "Causes for the Adoption of Water-Tube Boilers in the U. S. Navy."
 Engineer-in-Chief Geo. W. Melville, U. S. N.
- "Suggestions as to Improved Appliances for Launching Ships' Boats."
 JOHN HYSLOP, Esq.
- "The Electric Plants of the Battleships 'Kear-sarge' and 'Kentucky'."
 Naval Constructor J. J. WOODWARD, U. S. N.
- "The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted."
 GEO. W. DICKIE, Esq., Manager, Union Iron
 - Works.
 "Beam Formulæ Applied to a Vertically
- "Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results."
 H. F. Norron, Esq.
- "Notes on the Sheathing of the U. S. S. Chesapeake."
 Naval Constructor LLOYD BANKSON, U. S. N.
- "System of Work in a Great Lake Shipyard."
 W. I. ΒΑΒCOCK, Esq., Manager, Chicago Shipbuilding Co.

o. "Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard." JAMES DICKIE, Esq., Superintendent, Union Iron

Works.

"Designs for the Denver Class Sheathed Protected Cruisers." Chief Constructor PHILIP HICHBORN, U. S. N.

11. "Novelties in Ship Fittings." Asst. Naval Constructor R. M. WATT, U. S. N.

"Progressive Speed Trials of the U. S. S. Manning."

Prof. C. H. PEABODY, Massachusetts Institute Technology.

"Tactical Considerations Involved in Tor-13. pedo-Boat Design." Lieut. A. P. NIBLACK, U. S. N.

14. "On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over." Prof. Wm. F. DURAND, Sibley College, Cornell

University.

VOLUME VIII. (1900)

275 Pages. 151 Plates and Drawings.

PAPERS.

"Capacity Test of a Unique Form of Air I. Pump.

F. MERIAM WHEELER, Esq.

"Interchangeability of Units for Marine Work."

W. D. Forbes, Esq.

3. "The Performance of the Imperial Russian Cruiser Variag."

CHAS. H. CRAMP, Esq., Pres. Wm. Cramp & Sons, Ship and Engine Building Co., Philadelphia, Pa.

4. "The United States Experimental Model Basin."

Naval Constructor D. W. TAYLOR, U. S. N.

- 5. "The Composition and Classification of Paints and Varnishes."

 Prof. A. H. Sabin.
- "Tests of the Electric Plants of the Battleships Kearsarge and Kentucky." Naval Constructor J. J. Woodward, U. S. N.
- "Coaling of the U. S. S. Massachusetts at Sea."
 Spencer Miller, Esp.
- "Notes on Recent Improvements in Foreign Shipbuilding Plants."
 Asst. Naval Constructor H. G. GILLMOR, U.S.N.
- 9. "Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the Production of the Largest Class of Ocean Passenger and Freight Steamships?

GEO. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco.

- 10. "Classification Rules."
 THEODORE LUCAS, Esq.
- II. "Recent Designs of Battleships and Cruisers of the U. S. N."

 Chief Constructor Philip Hichborn, U. S. N.
- 12. "A Comparison of the Contract Prices of our Naval Vessels."

 HARRISON. S. TAFF, Esq.
- "Launch of a Cruiser and a Battleship."
 JAMES DICKIE, Esq., Supt., Union Iron Works, San Francisco.
- 14. "Safety of Torpedo Boats at Sea and in Action Under Various Conditions." Naval Constructor I.LOYD BANKSON, U. S. N.

VOLUME IX. (1901)

251 Pages. 58 Plates and Drawings.

PAPERS.

- "Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo.'"
 FRANK E. KIRBY, Esq.
- "Effect of Variation of Dimensions on the Stresses in a Ship's Structure." Professor H. C. SADLER, Esq.
- "Power Consumed in Propelling the Whitehead Torpedo at Various Speeds."
 FRANK M. LEAVITT, Esq.

4. "The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)

Naval Constructor D. W. TAYLOR, U. S. N.

 "The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)

Rear Admiral George W. Melville, U. S. N.

6. "A Brief Comparison of Recent Battleship Designs."

Naval Constructor H. G. GILLMOR, U. S. N.

- 7. "Changes in Torpedo Boat Designs."
 CHARLES P. WETHERBER, Esq.
- 8. "Late Developments in Armor and Ordnance."

 I. F. Meigs. Esg.
- "Recent Experiments in Attacking Armor with High Explosive Shells."
 Captain E. B. Babbirt, Ordnance Dept., U. S. A.
- "Some Notes on Tidal Corrections."
 Messrs. E. A. Stevens, and C. P. Paulding.
- "Side Launch of Torpedo Boats and Torpedo Boat Destroyers."

Asst. Naval Constructor Wm. G. Groesbeck, U. S. N.

VOLUME X. (1902)

377 Pages. 108 Plates and Drawings.

PAPERS.

- "Technical Training for Shipbuilders."
 HENRY S. PRITCHETT, Ph.D., LL.D.
- 2. "Progressive Trials of the Screw Ferry Boat 'Edgewater."

EDWIN A. STEVENS, and CHARLES P. PAULDING.

- 3. "The Possible and Probable Future Developments in the Use of Electricity on Board Ships."
 - F. O. BLACKWELL, Esq.
- "The Preliminary Official Trial of the U. S. B. S. 'Maine.'"
 Asst. Naval Constructor J. W. POWELL, U. S. N.
- "The Water-tube Boiler in the American Mercantile Marine."
 WM. A. FAIRBURN, Esq.
- 6. "Longitudinal Bending Stress on Damaged Ships."

 GEORGE C. COOK, Esq.
- "Some Problems on the Surfaces of Buoyancy and of Waterlines." Professor Cecil H. Peabody.

 "Vibration of Steamships; with Special Rererence to those of the 2d and Higher Periods."

> Rear-Admiral GEORGE W. MELVILLE, Engineerin-Chief, U. S. N.

"The Development of Modern Ordnance and Armor in the United States."

Rear-Admiral CHARLES O'NEIL, Chief of the Bureau of Ordnance, U. S. N.

10. "Remarks on the New Designs for Naval Vessels."

Rear-Admiral Francis T. Bowles, Chief Constructor, U. S. N.

II. "The Tactics of the Gun." Lieut.-Commander Albert P. Niblack, U. S. N.

12. "Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States."

GEORGE W. DICKIE, Esq.

13. "Submarine Torpedo Boats; Past, Present and Future."

LAWRENCE Y. SPEAR. ESG.

"Measurement Rules for Yachts, with Special Reference to Racing Conditions."
 F. W. BELKNAP, Esq.

15. "The Balancing of Valve Gears." (Prize Competition Paper.)

Luther D. Loverin, Esq.

VOLUME XI. (1903)

353 Pages, 148 Plates and Drawings.

PAPERS.

- "Progressive Trial of Ferry Boat 'Bremen.'" EDWIN A. STEVENS, Esq.
- "Notes on the Arrangements and Construction of Steam Pipes and their Connections." R. C. MONTEAGLE, Esq.
- 3. "Gasoline Engines for Marine Propulsion." D. H. Cox. Esq.
- "Some Thoughts on the Design of Modern Steam Yachts." CLINTON H. CRANE, Esq.
- 5. "Watertight Subdivision of Warships." Commander WM. HOVGAARD, Royal Danish Navy.
- 6. "Non-corrosive Nickel Steel Boiler Tubes." ALBERT LADD COLBY, Esq.
- "Curves of Form of the Initial Condition." 7. GEORGE C. COOK, Esq.
- "The Metric System in Relation to the Shipbuilding Industry in the United States." Naval Constructor J. H. LINNARD, U. S. N.
- "Electricity in Manufacturing Plants." Q. ' W. M. McFarland, Esq.
- "Description of the Design and Building of IO. the 21,000-ton Steamships 'Minnesota' and 'Dakota.' "

CHARLES R. HANSCOM, Esq.

- II. "Ships' Forms Derived by Formulæ."

 Naval Constructor D. W. TAYLOR. Esq.
- "Displacement and Stability Calculations."
 WALTER S. LELAND, Esq.
- 13. "Graphic Calculations of a Ship's Stability."
 Professor M. H. BAUER.
- 14. "Notes on the Launching of the Cruiser 'Chattanooga."
 M. S. Chace, Esq.
- "Notes on Side Launchings."
 Asst. Naval Constructor Wm. G. GROESBECK,
 U. S. N.
- 16. "Launching of Large Merchant Vessels."
 WM. A. FAIRBURN, Esq.
- 17. "Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea."

 Lieut. L. H. CHANDLER, U. S. N.

VOLUME XII. (1904)

362 Pages. 115 Plates and Drawings.

PAPERS.

- "Simple Methods in Warship Designs a Necessity."
 George W. Dickie, Esq.
- 2. "The Semi-Globular Naval Battery."
 Anson Phelps Stokes, Esq.

- "The Seagoing Battleship."
 Commander WILLIAM HOVGAARD, Royal Danish Navy.
- 4. "Some Recent Experiments at the United States Model Basin."

 Naval Constructor D. W. TAYLOR, U. S. N.
- "Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea."
 Lieutenant L. H. CHANDLER, Esq.
- "The U. S. Armored Cruiser 'Colorado.'"
 Asst. Naval Constructor J. W. Powell, U. S. N.
- "Coaling Warships at Sea—Recent Developments."
 SPENCER MILLER, Esg.
- "Time Allowance for Steam Yacht Races."
 Rear-Admiral George W. Melville, Ex-Engineer-in-Chief, U. S. N.
- "On the Rules of Lloyd's Register for Building Yachts to Class."
 George Stanbury, Esq.
- 10. "The Position of the Center of Lateral Resistance."

 Mons. L. E. Bertin.
- "Subdivision of Weights in Ships' Displacement."
 Colonel NABOR SOLANI.
- 12. "The Shipping and Shipbuilding of Puget Sound."

 FRANK W. Hibbs, Esq.

 "Maintenance of Machinery in Merchant Ships."
 ROBERT HAIG, Esq.

- "Uniform Specifications."
 W. D. Forbes, Esq.
- 15. "High-Speed Gasoline Launches."

 CLINTON H. CRANE, Esq.
- 16. "Speed and Power of Recent Motor Boats." ALPHEUS A. PACKARD, Esq.
- "Recent Launching Practice of the Atlantic Coast."

Asst. Naval Constructor R. H. M. Robinson, U. S. N.

"Recent Launching Practice of the Pacific Coast."

EVERETT P. LESLEY, Esq.

VOLUME XIII. (1905)

394 Pages. 201 Plates and Drawings.

PAPERS.

- "Some Problems in Ferry Boat Propulsion." Colonel EDWIN A. STEVENS, Vice-President.
- 2. "Experiments With Ventilating Fans and Pipes."

Naval Constructor D. W. TAYLOR, U. S. N., Member of Council.

- "Experimental Researches on the Performance of Screw Propellers."
 Professor Wm. F. Durand, Member of Council.
- "Some Results of Tests of Model Propellers."
 A. V. Curtis, and L. F. Hewins, Juniors.
- "The Cruiser."
 Commander Wm. Hovgaard, Royal Danish Navy, Member.
- "A Comparison of Recent Battleships."
 Naval Constructor H. G. GILLMOR, U. S. N., member.
- "THE ULTIMA," a Globular Naval Battery."
 ANSON PHELPS STOKES, ASSOCIATE.
- "A Note from Japan."
 GEORGE W. DICKIE, Member of Council.
- "Longitudinal Bending Moments of Certain Lake Steamers."
 W. I. Babcock, Member of Council.
- IO. "Some Notes on Steam Boiler Troubles."
 HORACE SEE, Member of Council.
- "Notes on the Strength of Water-tight Bulkheads for Battleships and Cruisers."
 HAROLD F. NORTON, Associate.
- 12. "Marine Applications of the Curtis Steam Turbine."

 CURTIS, CHARLES G., Member

"Marine Steam Turbine Development and Design.'

E. M. SPEAKMAN, Associate.

- "Methods of Conducting Speed Trials." Naval Constructor J. J. WOODWARD, U. S. N., Member.
- 15. "How a Ninety-footer Behaves in an Ocean Race." PAUL EVE STEVENSON. Associate.
- "Problems in Connection with High Speed Launches." CLINTON H. CRANE, Associate.
- 17. "Progressive Speed Trials of the Gasoline Launch 'LUDO.'" GEORGE CROUSE COOK, Member.
- "Scantling Regulations in Yachting." W. P. STEPHENS, Associate.

VOLUME XIV. (1906)

276 Pages. 134 Plates and Drawings.

PAPERS.

- "A Fireproof Ferryboat." F. L. DUBOSQUE, Member.
- "Construction of a Fireproof Excursion Steamer."

WILLIAM GATEWOOD, Member.

 "Performance of the Paddle-Wheel Steamboat 'New York' of the Hudson River Day Line."

Professor J. E. DENTON, Member of Council.

"Personal Impressions of Model Towing Stations Abroad."

Professor C. H. PEABODY, Member of Council.

"The Experimental Tank of the University of Michigan."

Professor H. C. SADLER, Member.

 "Model Basin Gleanings."
 Naval Constructor D. W. Taylor, U. S. N., Vice-President.

6½. "The Limit of Propeller Efficiency."
WILLIAM MCENTEE, U. S. N., Associate.

 "A Comparison of Durand's and Curtis & Hewins Papers on Propeller Experiments of 1905."

Colonel E. A. STEVENS, Vice-President.

8. "A Modern Fleet."

Captain E. B. BARRY, U. S. N., Associate.

"Recent Developments in Armor and Armament."

JOHN F. MEIGS, Associate.

10. "Notes on the Development of War Ship Design."

Naval Constructor R. H. Robinson, U. S. N., Member.

II. "The Development of Submarines."

LAWRENCE Y. SPEAR. Member.

12. "The Effect of the Universal Rule in Recent Yachts."

MARTIN C. ERISMANN, Junior.

- "Explosive Engines for Naval Purposes." ARTHUR T. CHESTER, Associate.
- 14. "Two Timber Dry Docks and Their Pumping Plant."

F. P. PALEN, and G. L. SMITH, Members.

15. "A New Sea Anchor for Coaling at Sea." Spencer Miller, Member.

VOLUME XV. (1907)

Pages Plates and Drawings.

PAPERS.

- "An Experimental Investigation of Stream Lines Around Ships' Models." Naval Constructor D. W. TAYLOR, U. S. N., Vice-Pres.
- "Some Experiments Upon the Effect of Longitudinal Distribution of Displacement."

Professor H. .C. SADLER, Member.

- "Further Tactical Consideration Involved in Warship Design."
 Com. A. P. Niblack, U. S. N., Member of Council.
- 4. "Submarines of Battleship Speed."

 MASON S. CHACE, Member.

- "Motor Boats for Naval Service."
 Naval Constructor L. S. Adams, U. S. N., Member.
- "High Speed Motor Boats for Pleasure Use."
 H. R. SUTPHEN, Associate.
- "Some Observations on Motor Propelled Vessels and Notes on the Bermuda Race."
 W. B. STEARNS, Member.
- "Two New Revenue Cutters for Special Purposes."
 Capt. C. A. McAllister, U. S. R. C. S., Member.
- "Tests on the S. S. Governor Cobb."
 Prof. W. S. Leland and H. A. EVERETT, Members.
- "Appliances for Manipulating Lifeboats on Sea-Going Vessels."
 Axel Welin, Member.
- II. "The Transportation of Refrigerated Meat to Panama."
 ROLAND ALLWORK, Member.
- 12. "Two Instances of Unusual Repairs to Vessels."
 - Asst. Naval Cons. W. B. Ferguson, U. S. N., Associate.
- 13. "Wooden Sailing Vessels (with particular reference to those built previous to the Civil War)."
 - B. B. Crowninshield, Member.
- 14. "Some Early History Regarding the Double-Turreted Monitors 'Miantonomoh' and Class."
 - W. T. POWELL, Member.

VOLUME XV. (1907.)

PAPERS READ BEFORE THE INTERNATIONAL CONGRESS OF NAVAL ARCHITECTS,

HELD IN BORDEAUX, FRANCE, JUNE, 1907.

On the Speed of Battleships."

Commander WM. HOVGAARD, R. D. N. Member.

"The Subsurface Torpedo Boat."

W. I. BABCOCK, Member of Council.

"The Skilled Mechanic."

W. D. FORBES, Member of Council.

AUTHOR'S NAMES AND PAPERS.

ADAMS, L. S.

"Motor Boats for Naval Service." Vol. 15.

ALDRICH. WM. S.

"Engineering Research in the Navy." Vol. 3.

ALLWORK, ROLAND.

"The Transportation of Refrigerated Meat to Panama." Vol. 15.

BABBITT, E. B.

"Recent Experiments in Attacking Armor with High Explosive Shells." Vol. 9.

BABCOCK, W. I.

"Portable Pneumatic Riveters in Shipbuilding."
Vol. 6.

"System of Work in a Great Lake Shipyard."
Vol. 7.

"Longitudinal Bending Moments of Certain Lake Steamers." Vol. 13.

"The Subsurface Torpedo Boat." Vol. 15.

BANKSON, LLOYD.

"Safety of Torpedo Boats at Sea and in Action Under Various Conditions." Vol. 8.

"Notes on the Sheathing of the U. S. S. 'Chesapeake.'" Vol. 7.

BATES, WM. W.

"Comparative Performance of American and Foreign Freighting Ships-Our Superiority." Vol. 1.

BAUER, M. H.

"Graphic Calculations of a Ship's Stability."
Vol. 11.

BARRY, E. B.

"A Modern Fleet." Vol. 14.

BAXTER, WILLIAM J.

"Notes on Launching." Vol. 2.
"Navy Yard Expenses." Vol. 5.

BELKNAP, F. W.

"Measurement Rules for Yachts, with Special Reference to Racing Conditions." Vol. 10.

BERTIN, L. E.

"The Use of Small Models for the Determination of Culves of Stability." Vol. 2.

"The Position of the Center of Lateral Resistance."

BLACKWELL, F. O.

"The Possible and Probable Future Development in the Use of Electricity on Board Ships." Vol. 10.

Bowles, Francis T.

"Remarks on the New Designs for Naval Vessels."
Vol. 10.

BOYD, JAMES T.

"United States Treasury Rules for the Inspection of Machinery and Boilers." Vol. 1.

CASSIDY, ARTHUR B.

"The Standard Navy Boats." Vol. 6.

CHANDLER, L. H.

"Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea." Vol. 11.

"Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea." Vol. 12.

CHACE, M. S.

"Notes on the Launching of the Cruiser 'Chattanooga'." Vol. 11.

"Submarines of Battleship Speed." Vol. 15.

CHENEAU, E.

"Cellulose and Its Application to Warships."
Vol. 2.

CHESTER, A. T.

"Explosive Engines for Naval Purposes." Vol. 14.

COLBY, ALBERT LADD

"Non-Corrosive Nickel Steel Boiler Tubes."
Vol. 11.

Cook, George C.

"Longitudinal Bending Stress on Damaged Ships."
Vol. 10.

"Curves of Form of the Initial Condition." Vol. 11. "Progressive Speed Trials of the Gasoline Launch 'LUDO'." Vol. 13.

COWLES, WM. BARNUM

"Water-Tight Bulkhead Doors — the 'Long Arm' System on the U. S. S. 'Chicago'." Vol. 5.

Cox, D. H.

"Gasoline Engines for Marine Propulsion."

CRAMP, CHAS. H.

"Evolution of the Atlantic Greyhound." Vol. 1.
"The Performance of the Imperial Russian Cruiser
'Variag'." Vol. 8.

CRAMP, HENRY W.
"Corn-Pith Cellulose." Vol. 4.

CRANE, CLINTON H.

"Some Thoughts on the Design of Modern Steam Yachts." Vol. 11.

"High Speed Gasoline Launches." Vol. 12.

"Problems in Connection with High Speed Launches." Vol. 13.

CROWNINSHIELD, B. B.

"Wooden Sailing Vessels (with particular reference to those built previous to the Civil War." Vol. 15.

CURTIS. CHARLES G.

"Marine Applications of the Curtis Steam Turbine."

CURTIS, A. V., AND HEWINS, L. F.
"Some Results of Tests of Model Propellers."
Vol. 13.

DAVENPORT, RUSSELL W.

"Production in the United States of Heavy Steel Engine, Gun and Armor Forgings," Vol. 1.

DAVIS, L. D.

"Accessibility and Circulation of Water-Tube Boilers." Vol. 2.

DENTON, JAMES E.

"Performance of the Twin-Screw Steamer 'City of Lowell'." Vol. 3.

"Performance of the Paddle Wheel Steamboat 'New York' of the Hudson River Day Line." Vol. 14.

DICKIE. JAMES

"Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard." Vol. 7.
"Launch of a Cruiser and a Battleship." Vol. 8.

DICKIE, GEO. W.

"Some Obstacles to Shipbuilding and Owning in this Country." Vol. 2.

"Torpedo Boat Destroyers for Sea Service, with Special Reference to the Conditions that Prevail on the Pacific Coast." Vol. 6.

"The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted." Vol. 7.

"Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the production of the Largest Class of Ocean Passenger and Freight Steamships?" Vol. 8.

"Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States." Vol. 10.

"Simple Methods in Warship Designs a Necessity." Vol. 12.

"A Tale from Japan." Vol. 13.

Dowst, F. B.

"The Ventilation of Ships." Vol. 3.

DuBosque, F. L.

"Speed Trials of a Screw-Propelled Ferry-Boat."
Vol. 4.

"A Fireproof Ferryboat." Vol. 14.

DURAND, W. F., AND McDermott, Geo. R.

"An Approximate Formula for the Wetted Surface of. Ships." Vol. 2.

"Screw Propellers." Vol. 4.

"Estimated Weights of Machinery." Vol. 5.

DURAND, W. F.

"The Law of Frictional Resistance." Vol. 1.

"The Number of Longitudinal Intervals in Ship Competition, as Affecting the Accuracy of Integration for Displacement," and "Note on the Relation between Reduced and True Wetted Surface." Vol. 3.

"An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers." Preliminary Paper. Vol. 5.

"On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over." Vol. 7.

"Experimental Researches on the Performance of Screw Propellers." Vol. 13.

ERISMANN, MARTIN C.

"The Effect of the Universal Rule in Recent Vachts." Vol. 1.

FAIRBURN, WM. A.

"The Water-tube Boiler in the American Mercantile Marine." Vol. 10.

"Launching of Large Merchant Vessels." Vol. 11.

FERGUSON, W. B.

"Two Instances of Unusual Repairs to Vessels."
Vol. 15.

FORBES, W. D.

"Interchangeability of Units for Marine Work."
Vol. 8.

"Uniform Specifications." Vol. 12.

"The Skilled Mechanic." Vol. 15.

FREAR, HUGO P.

"Use of Water Ballast for Colliers in the Pacific Coast Trade." Vol. 5.

GARDNER, WM.

"Steam Yachts as Naval Auxiliaries in Time of War." Vol. 1.

GATEWOOD, WILLIAM

"Construction of a Fireproof Steamer." Vol. 14.

GILLMOR, H. G.

"Torpedo Boat Design." Vol. 5.

"Notes on Recent Improvements in Foreign Shipbuilding Plants." Vol. 8.

"A Brief Comparison of Recent Battleship Designs." Vol. 9.

"A Comparison of Recent Battleships." Vol. 13.

GREENE, S. DANA

"Electricity on Shipboard — Its Present Position and Future Development." Vol. 2.

GROESBECK. WM. G.

"Side Launch of Torpedo Boats and Torpedo Boat Destroyers." Vol. 9.

"Notes on Side Launchings." Vol. 11.

HAIG. ROBERT

"Maintenance of Machinery in Merchant Ships."
Vol. 12.

HAMMAR, HUGO

"A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability." Vol. 4.

1

HANSCOM, CHARLES R.

"Description of the Design and Building of the 21,000-ton Steamships 'Minnesota' and 'Dakota'."
Vol. 11.

HIBBS, FRANK W.

"The Shipping and Shipbuilding of Puget Sound."
Vol. 12.

HICHBORN, PHILIP

"Experience Gained with our New Steel Ships as Regards Care and Preservation." Vol. 2.

"Recent Designs for Vessels for the U. S. Navy."
Vol. 3.

"The New Battleships." Vol. 4.

"Some Notes on the Speed Trials and Experience in Commission of our New Battleships." Vol. 5.

"Designs of the New Vessels for the U. S. Navy." Vol. 6.

"Designs for the 'Denver' Class Sheathed Protected Cruisers." Vol. 7.

"Recent Designs of Battleships and Cruisers of the U. S. N." Vol. 8.

HOVGAARD, WM.

"Watertight Subdivision of Warships." Vol. 11.

"The Seagoing Battleship." Vol. 12. "The Cruiser." Vol. 13.

"On the Speed of Battleships." Vol. 15.

Hyslop, John

"Suggestions as to Improved Appliances for Launching Ships' Boats." Vol. 7.

KING, FRANK B.

"Hydraulic Sheers for Lifting One Hundred and Twenty-five Tons." Vol. .

KIRBY, FRANK E.

"Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo'." Vol. 9.

LEAVITT, FRANK M.

"Power Consumed in Propelling the Whitehead Torpedo at Various Speeds." Vol. 9.

Leland, Walter S.

"Displacement and Stability Calculations." Vol. 11.

LELAND, W. S., and H. A. EVERETT.

"Tests on the S. S. Governor Cobb." Vol. 15.

LESLEY, EVERETT P.

"Recent Launching Practice of the Pacific Coast."
Vol. 12.

LINNARD, J. H.

"Naval Practice in Ship Rivets and Riveting." Vol. 4.

"The Metric System in Relation to the Shipbuilding Industry in the United States." Vel. 11.

LOVEKIN, LUTHER D.

"The Balancing of Valve Gears." Prize Competition Paper." Vol. 10.

LUCAS, THEODORE

"Classification Rules." Vol. 8.

McAllister, C. A.

"Two New Revenue Cutters for Special Purposes," Vol. 15.

McEntee. WILLIAM

"The Limit of Propeller Efficiency." Vol. 14.

McFarland, W. M.

"Electricity in Manufacturing Plants." Vol. 11.

McGuire, J. C.

"Aluminum-Its Alloys and Their Use in Ship

MEADE, RICHARD W.

Construction." Vol. 3.

"Some Suggestions of Professional Experience in Connection with the Naval Construction of the Last Ten Years—1884-1894." Vol. 2.

MEIGS, J. F.

"Late Developments in Armor and Ordnance."
Vol. 9.

"Recent Developments in Armor and Armament."
Vol. 14.

MELVILLE, GEORGE W.

"Notes on the Machinery of the New Vessels of the United States Navy." Vol. 1.

"The U. S. Triple-Screw Cruisers 'Columbia' and 'Minneapolis'." Vol. 2.

"Causes for the Adoption of Water-Tube Boilers in the U. S. Navy." Vol. 7.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
Vol. 9.

"Vibration of Steamships; with Special Reference to those of the 2d and Higher Periods." Vol. 10. "Time Allowance for Steam Yacht Races." Vol. 12.

MILLER, SPENCER

"Coaling Vessels at Sea." Vol. 7.

"Coaling of the U. S. S. Massachusetts at Sea." Vol. 8.

"Coaling Warships at Sea—Recent Developments." Vol. 12.

"A New Sea Anchor for Coaling at Sea." Vol. 14.

MONTEAGLE, R. C.

"Notes on the Arrangements and Construction of Steam Pipes and their Connections." Vol. 11.

NIBLACK, ALBERT P.

"Coal Bunkers and Coaling Ship." Vol. 1.

"Tactical Considerations Involved in War Ship Design." Vol. 3.

"Tactical Considerations Involved in Torpedo-Boat Design." Vol. 7.

"The Tactics of the Gun." Vol. 10.

"Further Tactical Considerations Involved in Warship Design." Vol. 15.

Nixon, Lewis

"Yachts in England and America." Vol. 2.

"Steel Canal Boats." Vol. 4.

"Regulations for Loading Vessels." Vol. 5.

Norton, H. F.

"Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results." Vol. 7.

"Notes on the Strength of Water-tight Bulkheads for Battleships and Cruisers." Vol. 13.

O'NEIL, CHARLES

"The Development of Modern Ordnance and Armor in the United States." Vol. 10.

O'Neil, James

"The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels." Vol. 1.

PACKARD, ALPHEUS A.

"Speed and Power of Recent Motor Boats." Vol. 12.

PALEN, F. P., AND G. L. SMITH

"Two Timber Dry Docks and Their Pumping Plant." Vol. 14.

PANKHURST, JNO. F.

"The Development of Shipbuilding on the Great Lakes." Vol. 1.

PARSONS, H. DEB.

"American Fire-Boats." Vol. 4.

PEABODY, C. H., AND MILLER, E. F.

"A Dynamic Steam Engine Indicator Tester."
Vol. 2.

PEABODY, C. H.

"Progressive Trials of the 'Guardian'." Vol. 5. "Stability of a Battleship under Damaged Conditions." Vol. 6.

"Progressive Speed Trials of the U. S. S. 'Manning'." Vol. 7.

"Some Problems on the Surfaces of Buoyancy and of Waterlines." Vol. 10.

"Personal Impressions of Model Towing Stations."
Vol. 14.

Post, Walter A.

"An Electrically Operated 150-ton Revolving Derrick." Vol. 6.

POWELL, J. W.

"The Preliminary Official Trial of the U. S. B. S. 'Maine'." Vol. 10.

"The U. S. Armored Cruiser 'Colorado'." Vol. 12.

POWELL, W. T.

"Some Early History Regarding the Double-Turreted Monitors 'Mintonomoh' and Class." Vol. 15.

PRITCHETT, HENRY S.

"Technical Training for Shipbuilders." Vol. 10.

Robinson, R. H. M.

"Recent Launching Practice of the Atlantic Coast."
Vol. 12.

"Notes on the Development of War-Ship Design." Vol. 14.

RUHM, T. F.

"Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battleships." Vol. 4.

SABIN, A. H.

"The Composition and Classification of Paints and Varnishes." Vol. 8.

SADLER, H. C.

"Effect of Variation of Dimensions on the Stresses in a Ship's Structure." Vol. 9.

"The Experimental Tank of the University of Michigan." Vol. 14.

"Some Experiments Upon the Effect of Longitudinal Distribution of Displacement." Vol. 15.

SAMPSON, W. T.

"Present Status of Face-Hardened Armor." Vol. 2.
"Test of an Experimental Turret of the U. S.
Battleship 'Massachusetts'." Vol. 4.

SEE. HORACE

"Some Notes on Steam Boiler Troubles." Vol. 13.

SMITH, H. G.

"Methods of Securing Water-Tight Work."
Vol. 6.

Snow, Elliot

"Rudder Experiments — U. S. S. 'Monterey'." Vol. 3.

SOLIANL NABOR

"Sub-division of Weights in Ships' Displacement."
Vol. 12.

SPEAKMAN, E. M.

"Marine Steam Turbine Developments and Design." Vol. 13.

SPEAR, LAWRENCE

v

"Bilge Keels and Rolling Experiments—U. S. S. 'Oregon'." Vol. 6.

"Submarine Torpedo Boats; Past, Present and Future." Vol. 10.

"The Development of Submarines." Vol. 14.

SPILLER, H. A.

"Pneumatic Steering Gear—as Applied to the U. S. Monitor 'Terror'." Vol. 5.

STAHL, ALBERT W.

"Hydraulic Power for Warships." Vol. 2.

"An Experimental Test of the Armored Side of the U. S. S. 'Iowa'." Vol. 3.

STANBURY, GEORGE

"On the Rules of Lloyd's Register for Building Yachts to Class." Vol. 12.

STEARNS, W. B.

"Some Observations on Motor Propelled Vessels and Notes on the Bermuda Race." Vol. 15.

STEPHENS. WM. P.

"The Centreboard—Its Influence on Design; Its Value and Proper Use." Vol. 3.

"The Steam Yacht as a Naval Auxiliary." Vol. 6. "Scantling Regulation in Yachting." Vol. 13.

STEVENS, E. A., AND PAULDING, CHARLES P.

"Some Notes on Tidal Corrections." Vol. 9.

"Progressive Trials of the Screw Ferry Boat 'Edgewater'." Vol. 10.

STEVENS, EDWIN A.

"Some Thoughts on the Design of New York Ferry Boats." Vol. 1.

"Progressive Trial of Ferry Boat 'Bremen'."
Vol. 11.

"Some Problems in Ferry Boat Propulsion."
Vol. 13.

"A Comparison of Durand's and Curtis & Hewins' Experiments of 1905." Vol. 14.

STEVENSON, PAUL EVE

"How a Ninety-footer Behaves in an Ocean Race." Vol. 13.

STOKES, ANSON PHELPS

"The Semi-Globular Naval Battery." Vol. 12. "The Ultima, a Globular Naval Battery." Vol. 13.

SUTPHEN, H. R.

"High Speed Motor Boats for Pleasure Use."
Vol. 15.

SWAN, JAMES

"Stability of a Ship in Damaged Condition."

TAFT, HARRISON S.

"A Comparison of the Contract Prices of our Naval Vessels." Vol. 8.

TAYLOR, DAVID W.

"The Wetted Surface of Ships." Vol. 1.

"Methods and Forms for Certain Ship Calculations." Vol. 3.

"The United States Experimental Model Basin." Vol. 8.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.) Vol. 9.

"Ship's Forms Derived by Formulæ." Vol. 11.
"Some Recent Experiments at the United States

Model Basin." Vol. 12.

"Experiments With Ventilating Fans and Pipes." Vol. 13.

"Model Basin Gleanings. Vol. 14.

"An Experimental Investigation of Stream Lines Around Ships' Models." Vol. 15.

TAYLOR, HENRY C.

"American Maritime Development." Vol. 3.

WATT, R. M.

"Novelties in Ship Fittings." Vol. 7.

WELIN, AXEL.

"Appliances for Manipulating Lifeboats on Seagoing Vessels." Vol. 15.

WETHERBEE, CHARLES P.

"Changes in Torpedo Boat Designs." Vol. 9.

WHEELER, C. E.

"The Commerce of the Great Lakes." Vol. 5.

WHEELER, F. M.

"Steam Economy Test of a Unique Form of Feed Pump." Vol. 6.

WILSON, THEODORE D. "Steel Ships of the United States Navy." Vol. 1.

WOODWARD, JOSEPH J.

"Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements." Vol. 1.

"Recent Light-Draught Gunboats of the U. S. Navv." Vol. 2.

"Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms." Vol. 6.

"The Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 7.

"Tests of the Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 8.

"Methods of Conducting Speed Trials." Vol. 13.



Each Volume also Contains:

List of Officers.

List of Members and Associates.

Articles of Incorporation.

Constitution and By-Laws.

Proceedings of Annual Meeting.

President's Address.

Report of Secretary and Treasurer.

Discussions on each Paper by the Leading Naval Architects and Engineers of the Country.

Cloth Binding. Size of Page, Quarto.

MEMORANDUM

WHE NEW YORK
WELLC LIBRARY

SOCIETY OF

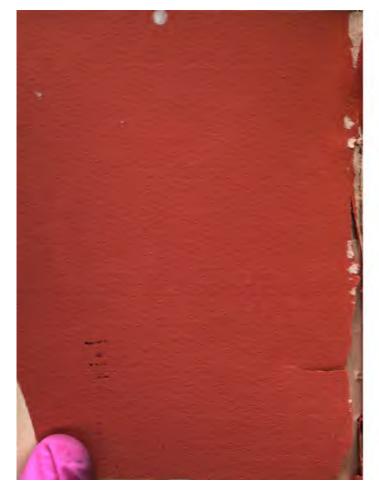
Naval Architects

and

Marine Engineers

1909





Society of

Naval Architects

AND.

Marine Engineers

ENGINEERING SOCIETIES BLDG.

29 West Thirty-Ninth Street

NEWYORK

JANUARY 1, 1909

ROEHR PUBLISHING COMPANY
35 Myrtle Ave., Brooklyn

THE NEW YOR PUBLIC LIE. CANCELLED ASTOR LENOX AND TILDEN FOUNDATIONS. R

NDEX.

Officers, List of
Membership-
Honorary Members 4
" Associates 4
Life Members 4
" Associates 4
Members 5
Associates 36
Juniors 51
Constitution and By-Laws 51
Table of Contents, Volumes I. to XVI
Author's Names and Papers

Society of Naval Architects and Marine Engineers

LIST OF OFFICERS

President FRANCIS T. BOWLES.

Past President and Honorary Associate Member CLEMENT A. GRISCOM.

Vice-Presidents

Term expires December 31, 1909: G. W. MELVILLE. T. W. MILLER. Term expires December

31, 1910. W. M. McFarland. G. W. QUINTARD, Term expires December 31, 1911:

F. E. KIRBY. E. A. STEVENS. Term expires December 31, 1912:

W. L. CAPPS.

Term expires December 31, 1913: C. H. CRAMP. R. D. EVANS. Term expires December 31, 1914:

F. L. FERNALD. STEVENSON TAYLOR.

Members of Council

Term expires December 31, 1909: W. D. FORBES, BAXTER. LEWIS NIXON, G. W. Dickie, Andrew Fletcher, G. E. WEED.

Term expires December 31, 1910:
W. I. BABCOCK, N. G. HERRESHOFF, J. H. LINNARD,
W. F. DURAND, F. L. DUBOSQUE, W. A. POST.

Term expires December 31, 1911: ron, H. P. Norton. Horace S Lis, C. H. Peabody, H. C. Sa J. E. DENTON, HORACE SEE. I. N. Hollis, H. C. SADLER.

Associate Members of Council

Term expires December 31, 1909: J. S. Hyde. I. R. Andrews.

Term expires December 31, 1910: W. H. Brownson.

Term expires December 31, 1911:
H. L. ALDRICH. H. D. GOULDER,

Executive Committee

FRANCIS T. BOWLES, Ex-Officio. WASHINGTON L. CAPPS, LEWIS NIXON, JACOB R. ANDREWS. EDWIN A. STEVENS. STEVENSON TAYLOR, WILLIAM J. BAXTER, Ex-Officio.

Secretary-Treasurer WILLIAM J. BAXTER.

LIST OF MEMBERS

HONORARY MEMBER

WHITE, SIR WILLIAM H., K. C. B., Etc., Late Chief Constructor, British Navy, Cedarcroft, Putney Heath, S. W., London, England.

HONORARY ASSOCIATES

Brassey, Rt. Hon. Lord, K. C. B., Etc., 4 Great George St., Westminster, S. W.

CHAMBERLAIN, EUGENE T., Commissioner of Navigation, Department of Commerce and Labor, Washington, D. C.

GRISCOM CLEMENT A., 305 Walnut St., Philadelphia, Pa.

LIFE MEMBERS

CRAMP, CHARLES H., The Wm. Cramp & Sons, Ship and Engine Building Co., 2113 Delancey St., Philadelphia, Pa.

FRICK, HENRY C., Capitalist, Frick Bldg., Pittsburg, Pa. JAQUES, WM. H., Little Boar's Head, N. H.

MANTON, FRANK S., President, American Ship Windlass Co., Providence, R. I.

QUINTARD, GEORGE W., Quintard Iron Works, foot East 12th St., New York.

STEVENS, EDWIN A., 15 William St., New York.

LIFE ASSOCIATE MEMBERS

DINKEY, ALVA C., President, Carnegie Steel Co., Pittsburg, Pa.

PUTNAM, HARRINGTON, 27 William St., New York.

QUAYLE, GEORGE L., Retired Ship Builder and Ship Owner, 3080 Euclid Ave., Cleveland, Ohio.

VANDERBILT, CORNELIUS, 30 Pine St., New York.

MEMBERS

A

ADAMS, LAWRENCE STOWELL, Naval Constructor, U. S. N., Navy Department.

ADDICKS, WALTER R., Vice-President, Consolidated Gas Company, 4 Irving Place, New York.

ALI, M., Lieutenant, Imperial Ottoman Navy, Yorkshire Fire & Life Insurance Co., Galata, Constantinople, Turkey.

Allderdice, Wm. H., Commander, U. S. N., Retired, 2162 Florida Ave., Washington, D. C.

Allen, Arthur P., address 75 Washington St., Engineer, Pacific Engineering Co., Seattle, Wash.

ALLEN, CARLTON B., Chief Engineer, Marine Department, N. Y., N. H. & H. R. R. Co., 30 Colonial Place, New Rochelle, N. Y.

ALLEN REDFIELD H., 34 Avon Way, Quincy, Mass.

Allwork, Roland, Inspecting Engineer, Panama R. R. & S. S. Line, 24 State St., New York.

ALMY, DARWIN, President, Almy Water-tube Boiler Company, 178-184 Allen Ave., Providence, R. I.

Anderson, Ernest H. B., Technical Representative, Parsons Marine Steam Turbine Co., 97 Cedar St., New York.

ANDERSON, MARTIN A., Commander, U. S. N., Retired, 834 Prospect Place, Madison, Wis.

Andrews, Thomas, Jr., Director, Harlan & Wolff, Belfast, Ireland.

ANGSTROM, ARENDT, General Manager, Canadian Shipbuilding Company, Ltd., Toronto, Ontario, Canada. ARTIS. THOMAS E., Chief Draughtsman, Bath Iron Works.

Bath, Maine.

ATLEE, JOSHUA W., Naval Constructor, The Wm. Cramp & Sons' S. & E. B. Company, Philadelphia, Pa. House—Riverton, Burlington Co., N. J.

- ATHOUGUIA, ANTONIO JERVIS, D', Royal Naval Engineer, Portuguese Navy, 13 Rua da Paz, Lisbon, Portugal.
- AUBIN, L. C. E. M., Engineer of Naval Construction, Navy Department, Paris, France.
- AYER, ARTHUR WHITTIER, General Superintendent, Harrison Brothers & Company, 3403 Gray's Ferry Road, Philadelphia, Pa.

В

- BABCOCK, W. IRVING, Engineer and Naval Architect, 17 State St., New York,
- BACON, H. D., President and General Manager, Bath Marine Construction Co., Bath, Me.
- BAILEY, CHARLES F., Chief Engineer, Newport News S. B. & D. D. Company, Newport News, Va.
- BAILEY, THEODORUS S., Asst. Chief Engineer, Electric Boat Co., Quincy, Mass.
- BAKER, FREDERIC W., Constructor, Lake Torpedo Boat Co., Bridgeport, Conn.
- BANCROFT, J. SELLERS, General Manager, Lanston Monotype Machine Co., 919 Pine St., Philadelphia, Pa.
- BANKSON, LLOYD, Naval Constructor, U. S. N., Naval Station. Cavite. P. I.
- BARRETT, GEORGE E., American Ship Windlass Co., Providence, R. I.
- BARRUS, GEORGE HALE, Mechanical Engineer, 12 Pemberton Square, Boston, Mass.
- BARTLETT, CHARLES H., Counsellor at Law, and Consulting Engineer, Patents and Admiralty Practice, 607
 Pemberton Building, Boston, Mass.
- BATES, EDWARD P., Manufacturer and Contractor, 228
 West Water St., Syracuse, N. Y.
- BATES, WM. W., Naval Architect, 38 West Second Ave., Denver. Colo.
- BAUER, MAX HEINRICH, Naval Architect, Berlin W30, Nollendorfsti 29-30, Germany.

BAXTER, WILLIAM J., Naval Constructor, U. S. N., Navy Yard, Brooklyn, N. Y.

BELKNAP, FRANCIS W., 37 W. 44th St., N. Y.

Bernier, Louis Leon, General Manager, Multicoil Co., 80 Broad St., New York.

Berrier-Fontaine, J. B. L., F. M., Directuer du Genie Maritime de Cadre de Reserve, 16 Boulevard de Strassbourg, Toulon-sur-mer, (Var), France.

BERRY, WARREN TAYLOR, General Superintendent, Quintard Iron Works, foot 12th St., E. R., New York.

BERTIN, L. E., Director of Naval Construction, French Navy, 8 Rue Garanciere, Paris, France.

Besselievre, Wm. C., Jr., Constructor, U. S. R. C. S., Custom House, Baltimore, Md.

Beuret, John D., Naval Constructor, U. S. N., Navy Yard, Bremerton, Wash.

BIGELOW, FRANK LEWIS, President, The Bigelow Co., New Haven, Conn.

BILES, J. HARVARD, Professor Naval Architecture, University Glasgow, Glasgow, Scotland.

BINLEY, WILLIAM, JR., Leading Draughtsman, C. & R. Department, Navy Yard, New York,

BINNEY, ARTHUR, Naval Architect, Mason Building, Boston, Mass.

BLANKENSHIP, JOHN MILLINGTON, Superintendent, Merchants' and Miners' Transportation Co., 1605 St. Paul Bldg., Baltimore, Md.

Blom, Christian, Commander Norwegian Navy and Sub-Director of the Navy Yard, Horton, Norway.

Bowers, Charles C., Superintending Engineer, 151 Chilton St., Elizabeth, N. J.

BOWERS, FREDERICK C., Commander, U. S. N.

Bu, S. E., Navy Department, Washington, D. C.

Bowles, Francis T., President, Fore River Shipbuilding Co., Quincy, Mass.

- Brauchli, Jacob, Inspecting Draughtsman, office of Superintending Engineer, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va.
- Bray, C. D., Prof. Mechanical Engineer, Tuft's College,
 Mass.
- Brewer, Charles B., care of Jas. B. Ladd, Consulting Engineering, 1735 Real Estate and Trust Building, Philadelphia, Pa.
- Brill, Philip B., Draughtsman, Bureau of Construction and Repair Navy Department, Washington, D. C.
- BROWN, DANIEL D. B., 920 Virginia St., Vallejo, Cal. BROWN, HARRY, Assistant Manager and Naval Architect,
- Brown, Harry, Assistant Manager and Naval Architect Fore River Shipbuilding Co., Quincy, Mass.
- Buckelew, Charles Henry, Manager, New York Office, Ashton Valve Co., 128 Liberty St., New York. House—126 West Fifth St., Plainfield, N. J.
- Bull, Goold H., Professor of Marine Engineering, Webb's Academy, University Heights, New York.
- BURKHEISER, EUGENE G., Chief Draughtsman, Floating Equipment, Pennsylvania R. R. Co., Jersey City, N. J.
- Burgess, W. Starling, President, W. Starling Burgess Co., Ltd., Marblehead, Mass.
- Burney, Charles E., Naval Architect, 207 Clinton St., Brooklyn, N. Y.
- Busch, Arthur L., Shipyard Superintendent, New Suffolk, L. I.

C

- CAPDEVIELLE, HENRY, Leading Draughtsman Bu C. & R., Navy Dept., Washington, D. C.
- CAPPS, WASHINGTON L., Rear-Admiral and Chief Constructor, U. S. N., Chief of the Bureau of Construction and Repair, Navy Dept., Washington, D. C.

- CARNES, WILLIAM F., Chief Engineer, Harlan & Hollingsworth Co., Alhambra Apartments, W. 16th St., Wilmington, Del.
- CARTER, GEORGE JOHN, Manager, Elswick Shipyard, Sir W. G. Armstrong, Whitworth & Co., Ltd., New Castle-on-Tyne, England.
- CARTER, T. F., Commander, U. S. N., Homestead Steel Works, Munhall, Pa.
- CASKEY, S. S., Pneumatic Tools, 2112 Tioga St., Philadelphia, Pa.
- CASSIDY, ARTHUR B., Draughtsman in charge, Office of Superintending Constructor, Fore River Shipbuilding Co., 71 Winthrop Ave., Wollaston, Mass.
- CATHCART, WILLIAM LEDYARD, Gwynedd, Pa.
- CHAFFEE, J. IRVIN, Professor of Mathematics, Webb's Academy, Fordham Heights, N. Y.
- CHANDLER, L. H., Lieut.-Commander, U. S. N., Navy Dept., Washington, D. C.
- CHACE, MASON SMITH, Naval Architect, 31 Wales St. Dorchester, Boston, Mass.
- CLARKE, WALTER WILLIAM, Engineer, Babcock & Wilcox Co., Sterling Dept., Barberton, Ohio.

 Home—2122 Gratz St., Philadelphia, Pa.
- CLARKE, GEO., Genl. Mgr., Kensington Shipyard Co., Beach & Palmer Sts., Philadelphia, Pa. Home address—2122 Gratz St., Philadelphia, Pa.
- CLARKE. SAMUEL J., 300 West 103d St., New York.
- Collison, William, Brown, Draughtsman, Navy Yard, Charleston, S. C.
- COOK, FRED. M., Naval Architect, Union St. Court, Bath, Maine.
- COP, HUIBERT, Prof. Naval Architecture, Polytechnical School at Delft, Oost Sirgel 61, Delft, Holland.
 - CORNBROOKS, ERNEST I., Newport News S. B. & D. D. Co., Newport News, Va.

CORNBROOKS, THOMAS M., Naval Architect, Maryland Steel Co., Sparrow's Point, Md.

COWLES, WM. BARNUM, Consulting Naval Architect and Mechanical Engineer, Lake and Wason Sts., Cleveland. Ohio.

COX, DANIEL H., Naval Architect, 15 William St., New York.

Cox, IRVING, Naval Architect, 15 William St., New York. Coxe, William Griscom, President, Harlan & Hollingsworth Co., Wilmington, Del.

CRAIG, GEORGE L., 43 Produce Exchange, Toledo, O.

CRAIG, JOHN, 43 Produce Exchange, Toledo, O.

CRAIG, JOHN F., Gen'l Mgr., Craig Shipbuilding Co., Long Beach, Cal.

CRAMP, EDWIN S., 127 East 61st St., New York.

CRAMP, WILLIAM M., 1227 N. Broad St., Philadelphia, Pa.

CRANE, CLINTON H., Naval Architect, 52 Pine St., N. Y. CROWNINSHIELD, B. B., Naval Architect, 70 Long Wharf, Boston, Mass.

CURR, ROBERT, Naval Architect, 412 Century Building, Cleveland. O.

CURTIS, CHARLES GORDON, International Curtis Marine Turbine Co., 2 Rector St., New York.

CURWEN, HENRY ROBERT, Draughtsman, Fore River Shipbuilding Co., Quincy, Mass.

\mathbf{D}

Davidson, James Edward, Assistant General Manager, James Davidson, Shipbuilder, 1710 Centre Ave., Bay City, Mich.

DAVIDSON, MARSHALL T., 108 St. James Place, Brooklyn. N. Y.

DAVIS, CHARLES HENRY, Consulting Engineer, South Yarmouth, Mass,

- DAVIS, LEONARD D., 2668 Peach St., Erie, Pa.
- DEGELDER, WILLIAM HESSEL MARIUS, Manager L. Smit and Zoon, Ship and Engine Building Works, Kinderdyk, Holland.
- DeLaval, Carl George, General Manager, -Henry R. Worthington Hydraulic Works, Harrison, N. J.
- DELONG, HAROLD W., P. O. Box 1036, Bath, Me.
- DEMING, WILLIAM HENRY, Draughtsman and Mechanical Engineer, Continental Iron Works, Brooklyn, N. Y.
- DENTON, JAMES E., Professor Exp. Mechanics, Stevens Institute of Technology, Hoboken, N. J.
- DESANGES, H. L., Supt. Floating Equipment, L. I. R. R., Long Island City, N. Y.
- DIALOGUE, JOHN H., Shipbuilder, 515 Linden St., Camden, N. J.
- DICKEY, WM. D., Vice-Pres. and Genl. Mgr., Shooter Island Shipyard Co., Mariners' Harbor, S. I. Room G-1, Produce Exchange, New York.
- DICKIE, DAVID W., Engineer and Naval Architect, 112
 Market St., San Francisco, Cal.
- DICKIE, GEO. W., Naval Architect and Marine Engineer, 24 California St., San Francisco, Cal.
- DICKIE, JAMES, Naval Architect and Marine Engineer, 112 Market St., San Francisco, Cal.
- Dickinson, Randall T., President, Crown Smelting Co., Chester, Pa. Mail address, Claymont, Del.
- Dix, H., Naval Constructor, N. W. 23, Siegmundsdorf 22, Berlin, Germany.
- Dosson, WM. A., Naval Architect, Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.
- Dodd, Willis Gorman, Consulting Engineer, 17th and Capp Sts., San Francisco, Cal.
- DONALD, JAMES, Naval Architect, New York Shipbuilding Co., Camden, N. J.

Donnelly, Wm. T., Consulting Mechanical Engineer, 135 Broadway, New York.

DuBois, A. J., C. E., M. E., Prof. of Engineering, Sheffield Scientific School, Yale College, New Haven, Conn.

DuBose, William G., Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.

DuBosque, F. L., Assistant Engineer, Floating Equipment P. R. R., Jersey City, N. J.

DUKE, JAMES OLIVER, Asst. Superintendent, Kensington Shipyard Company, Philadelphia, Pa.

DURAND, WILLIAM F., Professor, Mechanical Engineering, Stanford University, California.

\mathbf{E}

EBSEN, HENRY L., W. & A. Fletcher Co. House, 927 Bloomfield St., Hoboken, N. J.

ECKART, WILLIAM R., Consulting Engineer, 3014 Clay St., San Francisco, Cal.

Edson, Jarvis B., 313 West 74th St., New York.

EDWARDS, CHARLES B., Chief Engineer, Fore River Shipbuilding Co., Quincy, Mass.

ELLIOTT, WILLIAM E., Chief Engineer, Goodrich Transportation Company, Chicago, Ill.

ELWELL, HOWARD P., 78 Putnam St., Quincy, Mass.

ENGARD, ALBERT C., Chief Engineer, U. S. N. (retired), 2131 North 19th St., Philadelphia, Pa.

EPES, HENRY S., Assistant Naval Architect, Electric Boat Co., Quincy, Mass.

Evans, Holden A., Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.

EVERETT HAROLD ARTHUR, Instructor in Naval Architecture, Massachusetts Institute of Technology, Boston, Mass. EWERTZ, ERIC HAROLD, Supt. of Construction of Subm. Electric Boat Co., Quincy, Mass.; 63 Brook St., Wollaston, Mass.

F

FAIRBURN, WILLIAM A., 405 W. 115th St., New York.
FARGUSSON, MARK, Naval Architect and Engineer, Room
801, 11 Broadway, New York.

FELTON, HERBERT C., Superintendent, Delaware River Ferries. Camden. N. J.

Ferguson, George R., Assistant Engineer, Department of Bridges, 1226 Park Row Building, New York.

Ferguson, Homer L., Superintendent of Hull Construction, Newport News S. B. & D. D. Co., Newport News, Va.

Fernald, Frank L., Naval Constructor, U. S. N. (retired), Eliot, Me.

FERRAND, C., Engineer-in-Chief de la Marine Française, 48 Rue de Grenelle, Paris, France.

FERRIS THEODORE E., Naval Architect, 90 Wall St., N. Y. FLETCHER, ANDREW, North River Iron Works, Hoboken, N. J.

FLETCHER, WM. H., North River Iron Works, Hoboken, N. J.

FLOOD, H. C., General Manager, Bergen Mekanikse Vaerksted, Bergen, Norway.

FORBES, W. D., President, W. D. Forbes Co., New London, Conn.

FORD, DANIEL EDWARD, Superintendent of Construction and Repairs, Standard Oil Co., 26 Broadway, New York.

FORSYTH, ROBERT, Consulting Engineer, 1020 Merchants Exchange, San Francisco, Cal.

- FRASER, ROBERT H., Consulting Engineer and Marine Surveyor, Chamber of Commerce Building, Boston, Mass.
- FREAR, HUGO P., General Superintendent, Hull Construction Union Iron Works, San Francisco, Cal.
- FRICK, HENRY EDGEWORTH, General Foreman, Fore River Shipbuilding Co., Quincy, Mass.
- FRIES, AXEL H., General Manager, Gefle Machine Works, Gefle, Sweden.

G

- GARDNER, JOHN HOWLAND, Superintendent, Marine Construction, New England Steamship Co., Newport, R. I.
- GARDNER, WM., Architect, 1 Broadway, New York.
- GATEWOOD WILLIAM, Chief Draughtsman, Hull Department, Newport News S. B. & D. D. Co., Newport News. Va.
- GILLMOR, HORATIO G., Naval Constructor, U. S. N., Superintending Constructor, Fore River S. B. Co., Quincy, Mass.
- GLEASON, HENRY M., Assistant Naval Constructor, U. S. N. Navy Yard, Philadelphia, Pa.
- GODBOLD, CHARLES H., Jr., Draughtsman, Bureau Construction and Repair, Navy Department, Washington, D. C.
- GOLDEN, MICHAEL J., Professor Dynamic Engineering, Purdue University, Lafayette, Ind.
- Gray, Thomas, Professor, Director of Department Mechanical and Electrical Engineering, Rose Polytechnic Institute.
 - House, 802 Chestnut St., Terre Haute, Ind. "
- GROESBECK, Wm. G., Naval Constructor, U. S. N., Navy Yard, New York.
- Gunnell, Elias, President, Manitowoc Dry Dock Co., Manitowoc, Wis.

HAIG, ROBERT, Surveyor, Lloyd's Register of Shipping, 324 Bourse, Philadelphia, Pa.

HAIGHT, ROBERT STANLEY, Amityv'le, L. I.

HALL, R. T., Commander, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va.

HALL, THOMAS S., 423 51st St., Brooklyn, N. Y.

HAMMAR, Hugo, Superintendent, Goteborg, Nya Verkstada A. B., Goteborg, Sweden.

HAND, HARRY W., General Manager, The Wm. Cramp & Sons' S. & E. B. Company, Philadelphia, Pa.

HANSCOM, CHARLES R., President, Eastern Shipbuilding Co., New London, Conn.

HANSCOM, JOHN F., Naval Constructor, U. S. N. (retired), Senior Member of Board on Changes, Room 11, Fourth Floor, P. O. Bldg., Philadelphia, Pa.

HARGAN, JAMES A., Chief Draughtsman, C. & R. Dept., Navy Yard, New York. House, 1516 47th St., Brooklyn, N. Y.

HART, GEORGES, Chief Engineer, French-English Postal Service, 99 Rue La Fayette, Paris.

HARTT, WM. H., Chief Draughtsman, C. & R. Dept., Navy Yard, Norfolk, Va.

HAUG, JOHN, Superintendent Marine Transportation, Standard Oil Co., 2313 Durant Ave., Berkeley, Cal.

HAYWARD, H. S., Superintendent, Motive Power, Pennsylvania R. R., Jersey City, N. J.

HAY, MARLEY F., care of Whitehead & Co., Ltd., Fiume, Hungary.

HECTOR, DETLOF A., Naval Architect, Bergsunds Mek. Verkstads, Aktiebolag, Stockholm, Sweden.

HENDERSON, RICHARD, Captain, U. S. N. (retired), Salisbury, N. C.

- HERBERT, FREDERICK DAVIS, 401 Upper Mountain Ave., Montclair, N. J., N. Y. Manager, The Terry Steam Turbine Co., 90 West St., New York,
- HERRESHOFF, JOHN B., President, Herreshoff Mfg. Co., Bristol. R. I.
- HERRESHOFF, NATHANIEL G., Vice-President and Manager, Herreshoff Mfg. Co., Bristol, R. I.
- HERRICK, JOHN J., Mechanical Engineer, Department Docks and Ferries, 424 Amity St., Flushing, L. I.
- HEWITT, PETER COOPER, Scientist, Madison Square Garden Tower, New York.
- HIBBS, FRANK W., Superintending Engineer, Moran Bros. Co., Seattle, Wash.
- HIGGINS, HOWARD C., Superintending Engineer, Old Dominion S. S. Co., 81 Beach St., New York.
- HILL, EDWARD BUFFUM, Assistant to Manager, Fore River Shipbuilding Co., Quincy, Mass.
- HILLMANN, GUSTAV, Naval Architect, 470 Greene Ave., Brooklyn, N. Y.
- Hobson, R. P., House of Representatives, Washington, D. C. Home—2117 S St.
- Hollis, Ira N., Professor Mechanical Engineering, Harvard University, Cambridge, Mass.
- HOOVER, JOHN B., JR., Leading Draughtsman, Navy Yard, Norfolk, Va. Residence, 191 Jefferson Ave., Brooklyn, N. Y.
- HOPKINS, ALBERT LLOYD, Assistant General Manager, Newport News S. B. & D. D. Co., 2904 West Ave., Newport News, Va.
- HOPKINS, EDWARD, Naval Architect, Toledo Shipbuilding Co., Toledo, O.
- Hough, Edward Stampord Samuel, Engineer Surveyor, Bureau Veritas, 112 Market St., San Francisco, Cal.

HOUGHTON, WILLIAM, Chief Draughtsman, Office of Superintending Constructor, Bath Iron Works, Bath, Maine.

HOVGAARD, W., Professor of Naval Design, Massachusetts Institute of Technology, Boston, Mass.

House, 17 Winthrop St., West Newton, Mass.

Howard, Oliver Zell, Draughtsman, U. S. Naval Experiment Station, 50 Franklin St., Annapolis, Md.

HOWELL, WILLIAM NEILL, Chief Engineer, Lake Engineering Co., Carlton House, 11d Regent St., London.

HOXIE, WILLIAM D., Vice-President, The Babcock & Wilcox Co., 85 Liberty St., New York.

HOYT, FREDERICK M., President, Greenport Basin and Construction Co., Greenport, N. Y. Office, 45 Broadway, New York.

HUNTER, GEORGE BURTON, Chairman and Director, C. S. Swan & Hunter Co., Ltd., Wallsend-on-Tyne, England.

HYDE, CHARLES E., Marine Engineer and Naval Architect, New London, Conn.

HYDE, EDWARD W., Bath Iron Works, Bath, Me.

HYND, ALEXANDER, Consulting Engineer, 208 Western Reserve Bldg., Cleveland, O.

T.

JACOBUS, DAVID S., Advisory Engineer, The Babcock & Wilcox Co., 85 Liberty St., N. Y.; 70 Summit Ave., Jersey City, N. J.

JANSON, ERNEST N., Mechanical Engineer, Bureau of Steam Engineering, Navy Department, Washington, D. C.

Jansson, Constantin, Naval Architect and Marine Engineer, Unions gtu 41, Helsingfors, Finland.

- JEFFREY, FRANK, General Superintendent, Detroit Shipbuilding Co., Detroit, Mich.
- JOHNSTON, ARCHIBALD, Vice-President, Bethlehem Steel Co., 120 Church St., Bethlehem, Pa.
- Jones, Charles M., Consulting Engineer and Naval Architect, 1514 North Sixth St., Philadelphia, Pa. Jonson, Julius, 51 East ofth St., New York.
- JORDAN, S. S., Naval Architect and Engineer, Scarborough, Me.

ĸ

- KAEMMERLING, GUSTAV, Commander, U. S. N., Bureau of Steam Engineering, Navy Department, Washington, D. C.
- KATZENSTEIN, LEOPOLD, Mechanical Engineer, 358 West St., New York.
- KENNEY, LEWIS H., Draughtsman-in-charge, Steam Engineering Dept., Navy Yard, Philadelphia, Pa.
- Keough, William T., Consulting Engineer and Naval Architect, 932 Board of Trade Building, 131 State St., Boston, Mass,
- KILLILEA, JAMES J., Superintendent of Construction, U. S. Light-House Establishment, 39 Howland St., Boston, Mass.
- King, Frank B., Consulting Marine Engineer and Naval Architect, 1442 Rhode Island Ave., Washington, D. C.
- KIRBY, FRANK E., Naval Architect, 609 Stevens Building. Grand River Ave., Detroit, Mich.
- KONITZKY, H., Consulting Naval Architect, 15 S. Gay St., Baltimore, Md.
- KREER, JOHN G., Chief Engineer, Construction Department, J. T. Ryerson & Son, Chicago, Ill.

- LAING, ANDREW, Director and General Manager, The Wallsend Slipway and Engineering Co., Wallsendon-Tyne, England.
- LAKE, SIMON, President, Lake Torpedo Boat Co., Bridgeport, Conn.
- LASSOE, VALDEMAR F., Engineer and Naval Architect, Maritime Building, 8 Bridge St., New York.
- LAVERIE, ROBERT H., Superintendent, Shooter Island Shipyard Co., Mariner Harbor, New York.
- LEAVITT, FRANK M., Mechanical Engineer, 133 Plymouth St., New York.
- LEFLAIVE, L. J. G., Ex-Naval Constructor, French Navy, de la Maison Leflaive et Cie La Chaleassiere St. Etienne (Loire), France.
- Lee, Harold, Naval Architect and Engineer, Marion Building, Seattle, Wash.
- LEE, JAMES W., General Manager, Skinner Shipbuilding and Dry Dock Co., Baltimore, Md.
- LELAND, WALTER S., Assistant Professor of Naval Architecture, Massachusetts Institute of Technology, Boston, Mass.
- LEONARD, JOHN C., Commander, U. S. N., Address, Inspector of Ordnance, Cramps Shipyard, Philadelphia, Pa.
- LEPINE, F. C., Chief Carpenter, U. S. N., Navy Yard, New York.
- LEVENTHAL, PHILIP, Designing Engineer and Chief Draughtsman, with Wm. Gardner, I Broadway, New York.

١.

LIGNOLA RAIMONDO, Naval Constructor, Royal Italian Navy, R. Cantiere di Castellamare di Stabia, Italy. LILIEGREN, CARL OSCAR, Ingenior, Goteborg, Sweden.

- LILLIEHOOK, CHARLES J. F. M., Professor Naval Architecture, Royal Technical High School, Karlavigen 35, Stockholm, Sweden.
- LINCOLN, JAMES M., 405 Lenox Ave., New York.
- LINDFORS, HENRY A., Professor Naval Architecture, Chalmers Institute Technology. Gottenburg. Sweden.
- LINNARD, JOSEPH H., Naval Constructor, U. S. N., Bureau of C. & R., Navy Department, Washington, D. C.
- LOEWENSTEIN, LOUIS C., 16 Wolcott Road, Lynn, Mass. LOGAN, ROBERT, General Manager, American Shipbuilding Co., Cleveland, Ohio.
- LOVEKIN, LUTHER D., Chief Engineer, New York Shipbuilding Co., Camden, N. J.
- LOYD, JOHN, Mechanical Engineer, 558-562 Water St., New York.
- LUDERS, ALFRED E., Naval Architect and General Manager, Luders Marine Construction Co., Portchester, N. Y.
- LUKE, WILLIAM JOSEPH, Naval Architect, John Brown & Company, Ltd., Clydebank, Scotland.
- LUCAS, THEODORE, 801 St. John's Place, Brooklyn, N. Y. LYSHOLM, HENRY, Superintendent of Hull Construction, New York Shipbuilding Co., Camden, N. J.

M

- McAllaster, Eugene L., Mechanical Engineer and Naval Architect, Haller Building, Seattle, Wash.
- McAllister, Charles Albert, Engineer-in-Chief, U. S. Revenue Cutter Service, Treasury Department, Washington, D. C.
- McBride, Lewis B., Assistant Naval Constructor, U. S. N., care of Navy Dept., Washington, D. C.

- McDermott, George R., Professor, School of Marine Construction, Sibley College, Cornell University, Ithaca, N. Y.
- McEntee, William, Assistant Naval Constructor, U. S. N., Bureau of Construction and Repair, Navy Department, Washington, D. C.
- McFarland, Walter M., Westinghouse Electric and Manufacturing Co., P. O. Box 911, Pittsburg, Pa.
- McGregor, Robert, Superintending Engineer, Metropolitan S. S. Co., Pier 45, N. R.

 House—Sherman Square Hotel, New York.
- McMurtrie, Laurence H., of McMurtrie-Guiler Co., Consulting Engineers, 82 Beaver St., New York.
- MACFARLANE, JAMES, Superintendent, Floating Equipment and Dredging Isthmian Canal Commission, La Boca, C. Z.
- MACALPINE, JOHN H., Naval Architect and Consulting Engineer, 5.32 Walnut St., Philadelphia, Pa.
- MACLEAN, ALEXANDER J., Professor, Naval Architecture, Webb's Academy, University Heights, N. Y.
- MAGEE, EDWARD A., Chief Engineer, U. S. N. (retired), 187 Marcy Ave., Brooklyn, N. Y.
- MAGEE, GEO. W., Chief Engineer, U. S. N. (retired), 187 Marcy Ave., Brooklyn, N. Y.
- MAGRUDER, GEORGE M., Assistant Superintending Engineer, American-Hawaiian S. S. Co., 426 California St., San Francisco, Cal.
- MAGOUN, HENRY A., Vice-President, N. Y. Shipbuilding Co., Camden, N. J.
- MAIN, ARCHIBALD MACNICOL, Naval Architect, The Harlan & Hollingsworth Co., Wilmington, Del.
- Mancor, James Henry, Principal Engineer Surveyor, Lloyd's Register of Shipping, 17 Battery Place, New York.

- MANNING, CHARLES H., Passed Assistant Engineer, U. S. N. (retired), Superintendent, Amoskeag Mfg. Co., Manchester, N. H.
- MARVEL, THOMAS S., Shipbuilder, 51 Ann St., Newburg, N. Y.
- MATTHEWS, EVERETT M., Chief Draughtsman, C. & R. Dept., Navy Yard, League Island, Pa.
- Mattice, Asa M., Works Manager, Walworth Mfg. Co., South Boston, Mass.
- Mellin, Carl J., Consulting Engineer, American Locomotive Company, 1005 Union St., Schenectady, N. Y.
- MELVILLE, GEO. W., Rear-Admiral, ex-Engineer-in-Chief, U. S. N. (retired), 532 Walnut St., Philadelphia, Pa.
- METTAN, JOHN F., Chief Draughtsman, Engineering Department, Wm. Cramp & Sons' S. & E. B. Co., Philadelphia.
- MICKLEY, ALBERT J., Mechanical Engineer, Department of Docks and Ferris, foot of West 57th St., N. Y.
- MIDDLETON, PERCY H., Vice-President, H. I. Crandalı Company, 102 Border St., East Boston, Mass.
- MILLARD, WALTER H., Naval Architect, 17 State St., New York City.
- MILLER, SPENCER, Chief Engineer, Cableway Department, Lidgerwood Mfg. Co., 95 Liberty St., New York. House, 217 Turrell Ave., South Orange, N. J.
- MILNE, JAMES STRACHAN, Union Iron Works, San Francisco, Cal.
- MIZUTANI, YOSHIHIKO, Engineer Captain, Japanese Navy, Navy Yard, Kure, Japan.
- MONTEAGLE, ROBERT CHARLES, Chief Engineer, The Atlantic Works, East Boston, Mass.
- Mooney, Thomas, Engineer, koach's Shipyard, Chester, Pa. Douglaston, Long Island.
- MOORE, DOUGLASS G., 424 Westminster Ave., Elizabeth, N. J.

MOORE, MILLER F., 45 East Fourth Ave., Roselle, N. J. MOORE, STEWART H., President, Marine Engineers Beneficial Association, No. 4, 5617 Lafayette Ave., Chicago, Ill.

MORITZ, ALBERT, Commander, U. S. N. (retired), 153 East 73d St., New York.

MOSHER, CHARLES D., Chief Engineer, Mosher Water-Tube Boiler Co., 30 Church St., New York.

MOWER, CHARLES D., Naval Architect and Yacht Broker, 29 Broadway, New York.

MUCKLE, M. R., Jr., Mechanical Engineer, 1722 Pine St., Philadelphia, Pa.

MULL, JAMES HENRY, General Superintendent, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.

N

٠,•٠.

NACEY, JAMES, Naval Architect and Surveyor, 209 Western Reserve Building, Cleveland, O.

NEVINS, WILLIAM T., Superintendent Construction, 4 Sherman St., Chicago, Ill.

NEWMAN, RICHARD LANO, Naval Architect, The Den & Thorburn R. O., Victoria, B. C.

Nickum, Wm. Carr, Assistant Manager, Polson Iron Works, Toronto, Canada.

NILSON, LEONARD J., Yacht Builder, Ferry Bar, Baltimore, Md.

NISH, WILLIAM, Superintending Engineer, Anchor Line, 17-19 Broadway, New York.

Nixon, Lewis, 30 Church St., New York.

Nock, F. S., Naval Architect, East Greenwich, R. I.

NORMAN, JOHAN HUGO, Assistant Chief Draughtsman, Hull Construction Department, The Wm. Cramp & Sons' S. & E. B. Co. Philadelphia, Pa.

NORTON, HAROLD P., Commander, U. S. N., Bureau of S. E., Navy Dept., Washington, D. C.

- NUTTING, DANIEL CHAPLIN, Naval Constructor, U. S. N., Lureau of C. and R., Navy Department, Washington, D. C.
- Nystedt, Thure G., Naval Constructor, Royal Swedish Navv. Carlskrona. Sweden.

0

O'NEILL, JAMES J., Mechanical Engineer, The Fairfield Shipbuilding and Engineering Co., Ltd., Govan, Glasgow, Scotland.

P

- PACKARD, ALPHEUS APPLETON, President, New London Marine Iron Works, New London, Conn.
- PAGE, CHARLES BARNARD, President, Page Engineering Co., Inc., 121 E. York St., Baltimore, Md.
- Pahlow, Franklin, Conrad, Yard Superintendent, Great Lakes Engineering Works, Detroit, Mich.
- PALEN, FREDERICK POMEROY, Assistant Chief Engineer, Newport News S. B. & D. D. Co., Newport News, Va.
- PALMER, GEORGE Q., President, Quintard Iron Works, Foot of East 12th St., New York,
- PALMER, NICHOLAS F., JR., Treasurer and General Manager, Quintard Iron Works, Foot of East 12th St., New York.
- PALMER, WILLIAM FRANKLIN, Architect and Managing Owner, Palmer Fleet, Uphams Cor., P. O. No. 27 Hartford St., Dorchester, Mass.
- Parsons, Charles A., Director, Parsons Marine Steam Turbine Co., Wallsend-on-Tyne, England.
- Parsons, H. DeB., Consulting Engineer, 22 William St., New York.
- Paterson, James V., Vice-President and General Manager, The Moran Co., Seattle, Wash.

PATTERSON, JOSEPH SANBORN, Consulting Engineer, 333 75th St., Brooklyn, N. Y.

Patterson, Harold W., Leading Hull Draughtsman, Gas Engine and Power Co., and Chas. L. Seabury Co., Morris Heights, N. Y.

Pauli Sven, Assistant Naval Constructor, Kockums

Wharf, Malmo, Sweden.

Peabody, Cecil H., Professor of Naval Architecture and Marine Engineering, Massachusetts Institute of Technology, Boston, Mass.

Peabody, Ernest H., Marine Department, The Babcock & Wilcox Co., 85 Liberty St., New York.

PEACOCK, EDWARD L., Chief Constructor, Lake Engineering Co., Carlton House, 11d Regent St., London.

Penton, Henry, Engineer and Naval Architect, 814 Perry-Payne Building, Cleveland, Ohio.

PERHAM, ERNEST A., 225 W. 33d St., New York.

PERRY, WILLIAM A., 7 East 56th St., New York.

Pessano, Antonio C., President, Great Lakes Engineering Works, Detroit, Mich.

PITTS, THOMAS DORSEY, Civil Engineer, 904 American Building, Baltimore, Md.

PLATT, JOHN, 97 Cedar St., New York.

POMMER, EUGENE R., Mechanical Engineer, Dept. of Water Supply, Gas and Electricity, Municipal Building, Brooklyn.

House-765 Jefferson Ave., Brooklyn, N. Y.

POPPER, SIEGFRIED, late Chief Constructor, Imperial and Royal Austro-Hungarian Navy, Trieste, Stabilimento Tecuico, Austria.

POST, WALTER A., General Manager, Newport News S. B. & D. D. Co., Newport News, Va.

POWELL, JOSEPH WRIGHT, Assistant to the President, William Cramp & Sons' Ship & Engine Building Co., Philadelphia, Pa. Powell, William T., 1699 31st St., Washington, D. C. Powers, Wilbur F., Hull Draughtsman, N. Y. Shipbuilding Co., Camden, N. J.

PRATT, FRANCIS E., 53 Meadow Lane, New Rochelle, N. Y.

PURDY, JAMES G., Chief Hull Draughtsman, Gas Engine and Power Co., and Chas. L. Seabury Co., Morris Heights, N. Y.

R

RADFORD, GEORGE S., Assistant Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.

House, 1626 Riggs Place, N. W., Washington, D. C. RAYNAL, ALFRED H., Mechanical Engineer, Bureau of Steam Eng., Navy Dept.

REBOLLEDO, MIGUEL, Ingeniero, Calle Sur, 34, No. 5, Mexico City, Mexico.

REDGRAVE, DEWITT C., Commander, U. S. N. (retired), 525 West 150th St., New York.

Richson, Carl, Naval Constructor, Royal Swedish Navy, Riddarholmen 11, Stockholm, Sweden.

RILEY, ROBERT S., President, American Ship Windlass Co., Providence, R. I.

RITCHIE, JACOB S., 62 Beaver St., New York.

ROBERT, WILLIAM P., Naval Constructor, U. S. N., N. Y. Shipbuilding Co., Camden, N. J.

ROBERTS, THOMAS GAINES, Naval Constructor, U. S. N., Navy Yard, New York.

ROBINSON, EDWARD P., Superintendent, Atlantic Works, 80 Border St., East Boston, Mass.

ROBINSON, RICHARD H. M., Naval Constructor, U. S. N., Bu. C. & R., Navy Department, Washington, D. C.

ROBINSON, S. W., Professor Emeritus, Mechanical Engineering, Ohio State University, 1353 Highland St., Columbus, Ohio.

- ROCK. GEO. H., Naval Constructor, U. S. N., Newport News S. B. & D. D. Co., Newport News, Va.
- ROEDDER, O. C., Consulting Engineer, 38 Klauprecht-Str., Karlsruhe, Germany.
- ROELKER, CHARLES R., Rear-Admiral, U. S. N. (retired), 1434 Q St., N. W., Washington, D. C.
- ROELKER, H. B., Mechanical Engineer, 41 Maiden Lane, New York.
- ROSSELL, AXEL GUSTAF, Chief Draughtsman, Construction Department, Wm. Cramp & Sons' S. & E. B. Co., Philadelphie, Pa.
- ROTTMER, HENRY E., Draughtsman, Bureau Construction and Repair, Navy Department, Washington, D. C.
- Row, Reuben Robert, General Superintendent, The Gris-, com-Spencer Co., go West St., New York,
- Rowen, Joseph B., Fore River Shipbuilding Co., Quincy, Mass.
- ROWLAND, CHARLES B., Assistant Secretary and Engineer, Continental Iron Works, Brooklyn, N. Y. House, 329 Madison Ave., New York.
- ROWLAND, THOMAS F., JR., Secretary-Treasurer, The Continental Iron Works, Brooklyn, N. Y.
- ROWLAND, WILLIAM, 90 Wall St., New York.
- RUHM, THOMAS F., Naval Constructor, U. S. N., Navy Yard, New York.

S

- SABRI, S., Lieutenant-Commander, Imperial Ottoman Navy, Constantinople, Turkey.
- SADLER, HERBERT C., Professor, Naval Architecture, University Michigan, Ann Arbor, Mich.
- Sadtler, Edwin Brale, Naval Architect, The Harlan & Hollingsworth Co., Wilmington, Del.

SAVAGE, SILAS ANTHONY, Superintendent of Construction, U. S. Light House Service, 82 Monument St., West Medford, Mass.

Schock, Edson B., Naval Architect, Yacht and Ship Broker, 9 Murray St., New York.

SCHWAB, CHARLES M., President, Bethlehem Steel Co., Bethlehem, Pa.

Scott, J. Alvah, Naval Architect, 91 Westervelt Pl., Passaic, N. J.

Scribner, Edward H., Commander, U. S. N. (retired), 70 Tyler Park, Lowell, Mass.

Seabury, Charles L., Gas Engine and Power Co., and Chas. L. Seabury Company, Consolidated, Morris Heights, New York.

SEE, HORACE, Naval Architect and Marine Engineer,
1 Broadway, New York.

Sellers, Coleman, Jr., President and Engineer, Wm. Sellers & Co., 1600 Hamilton St., Philadelphia, Pa.

SHEPARD, GEORGE C., Chief Engineer, Maryland Steel Co., Sparrow's Point, Md.

SHERIDAN, RICHARD B., Chief Sales Engineer, Brown Hoisting Machinery Co., Cleveland, O.

SHERWOOD, JOHN ROBERTS, Vice-President and General Manager, Baltimore Steam Packet Co., Baltimore, Md.

SIMS, JAS. W., 21 Hope St., Hampton, Va.

SKENTELBERY, CHARLES, Marine Superintendent Massachusetts Steamship Co., Shawmount Bank Building, Boston, Mass.

SKINNER, HARRY G., President, The Wm. Skinner & Sons' S. B. & D. D. Co., Foot of Cross St., Baltimore, Md.

SLOAN, HORACE T., JR., Chief Draughtsman, Floating Equipment, Pennsylvania R. R. Co., Jersey City, N. J. SLOANE, JOHN D., Dubuque, Iowa.

SMITH, A. CARY, Naval Architect, 90 Wall St., New York.

SMITH, A. G., care of Nevins & Smith, 1317 Rockefeller Building, Cleveland, Ohio.

SMITH, CARROLL S., New York Agent, Wm. Cramp & Sons' S. & E. B. Co., 100 Broadway, New York.

SMITH, FRANCIS B., Chief Engineer, Pittsburg Steamship Co., Rockefeller Building, Cleveland, Ohio.

SMITH, G. EDWARD, Smith & Robinson, Engineers, 605 Provident Building, Philadelphia, Pa.

SMITH, GODFREY L., Civil Engineer, Newport News S. B. & D. D. Co., Newport News, Va.

SMITH, JAMES M., Manager, Collingswood Shipbuilding Co., Collingwood, Canada.

SMITH, HENRY G., General Manager, Fore River Shipbuilding Co., Quincy, Mass.

SMITH, SOMMERS N., 1540 No. 15th St., Philadelphia, Pa. SMITH, STUART FARRAR, Naval Constructor, U. S. N., Bureau C. & R., Navy Department, Washington, D. C.

SMITH WM. STROTHER, Commander, U. S. N., Bureau S. E., Navy Dept., Washington, D. C.

SNEDDON, JAMES PRENTICE, Third Vice-President, Stirling Consolidated Boiler Co., Barberton, Ohio.

Snow, Elliot, Naval Constructor, U. S. N., Navy Yard, Boston. Mass.

Soliani, Nabor, Direxione, del Cantiere Navale, Gio Ansaldo & C., Sestri Ponente, Italy.

SPANGLER, HENRY W., Professor, Mechanical Engineering, University of Pennsylvania, Philadelphia, Pa.

SPEAR, LAWRENCE, Vice-President, Electric Boat Co., Quincy, Mass.

Sperry, Austin, Naval Architect, 163 Main St., San Francisco, Cal.

- SPILMAN, JOHN A., Assistant Naval Constructor, U. S. N., Superintending Constructor, Bath Iron Works, Bath, Me.
- STAHL, A. W., Naval Constructor, U. S. N., Navy Yard, League Is., Pa.
- STEARNS, WILLIAM B., Naval Architect, Marblehead, Mass.
 STEVENS, ARTHUR D., President, Merrill-Stevens Co.,
 Iacksonville. Fla.
- STEVENS, JOHN A., Chief Engineer, Merrimack Mfg. Co., Lowell, Mass. House—78 Hanks St.
- STILLMAN, FRANCIS HILL, President, The Watson-Stillman Co., Fulton Terminal Bldg., 50 Church St., New York.
- STOCKER, ROBERT, Naval Constructor, U. S. N., Board of Inspection and Survey, Navy Dept., Washington, D. C.
- STRATTON, E. PLATT, 66 Beaver St., New York.
- SUGITANI, YASNICHI, Ship Yard Manager, Mitsu Bishi Dock Yards & Engine Works, Nagasaki, Japan.
- SUTPHEN, H. R., Vice-President and General Manager, Electric Launch Co., Bayonne, N. J.
- SWAN, JAMES, New York Shipbuilding Co., Camden, N. J. SWENSON, WILLIAM H. C., Managing Director, Trondhjems Shipbuilding and Engineering Co., Trondhjems, Norway.

\mathbf{T}

- TAWRESEY, JOHN G., Naval Constructor, U. S. N., Navy Yard, Portsmouth, N. H.
- TAYLOR, DAVID W., Naval Constructor, U. S. N., Bureau Construction and Repair, Navy Dept., Washington, D. C.
- TAYLOR, STEVENSON, Vice-President, Quintard Iron Works, foot of East 12th St., New York.

THAYER, IGNATIUS E., Naval Architect and Marine Engineer, 112 Market St., Room 409, San Francisco, Cal.

THAYER, JR., HORACE HOLDEN, Engineer, 1025 Market St., Wilmington, Del.

THOMAS, CARL CLAPP, Prof. Marine Engineering, University of Wisconsin, Madison, Wis.

THOMPSON, ARTHUR WELLINGTON, 415 W. 115th St., New York.

THOMSON, JAMES A., Depot Quartermaster's Office, Newport News, Va.

TOBEY, WILLIAM L., Mechanical Engineer, Lockwood Mfg. Co., 85 Sumner St., East Boston, Mass.

Tobin, J. A., Past Asst. Engineer, U. S. N. (retired), 32 Vine St., East Providence, R. I.

TODD, WILLIAM HENRY, General Superintendent, John N. Robins Co., Erie Basin, Brooklyn, N. Y.

House-Hotel St. George, Brooklyn, N. Y.

TORNROTH, BRUNO, Chief Draughtsman, Cox & Stevens, 15 William St., New York.

TORREY, JOHN D., Draughtsman, Bureau C. & R., Navy Dept., Washington, D. C.

TOWNE, N. P., Chief Engineer, Wm. Cramp & Son's Ship and Engine Building Co., Philadelphia, Pa.

TRUE, DWIGHT, Chief Hull Draughtsman, Great Lakes Engineering Works, Detroit, Mich.

TUSKA, GUSTAVE R., Consulting Engineer, 68 William St., New York.

TI

UBSDELL, JOHN A., Superintendent, Great Lakes Engineering Works, Detroit, Mich.

V

VAN BUREN, JOHN D., Civil Engineer, New Brighton, N.Y.
VAN VLECK, FRANK, Baltimore Copper Works, 2014
Park Ave., Baltimore, Md.

VARNEY, WILLIAM H., Naval Constructor, U. S. N., (retired), 712 N. Carey St., Baltimore, Md.

VARNEY, WILLIAM W., Mechanical Engineer, Attorney at Law, 710 N. Carey St., Baltimore, Md.

VOLLMANN, CARL WILHELM, President, Linde British Refrigeration Co., Coristine Bldg., Montreal, Can.

Volz, William E., Mechanical Engineer, Wheeler Condenser & Eng. Co., Carteret, N. J.

W

- WADDINGTON, JAMES F., Draughtsman, New York Shipbuilding Co., Camden, N. J.
- WALKER, FRANK, Naval Architect, 233 Globe Block, Seattle, Wash.
- WALKER, LOUIS W., Master Mechanic, P. R. R., Foot of 10th St., Hoboken, N. J.
- WALKER, ROBERT J., Director, Parsons Marine Steam Turbine Co., Turbinia Works, Wallsend-on-Tyne, England.
- Wallace, James C., President, American Shipbuilding Co., Cleveland, Ohio.
- WALLACE, W. CARLILE, Marine and Consulting Engineer, representative John Brown & Co., Ltd., 203 Greenwich St., New York,
- Wallace, William M., Computer, Bureau Construction and Repair, Navy Dept., 616 18th St. N. W., Washington, D. C.
- Walton, John Q., Constructor, U. S. Revenue Cutter Service, 4425 Kansas Ave., Washington, D. C.
- WARD, CHARLES, Mechanical Engineer, Charleston, Kanawha Co., W. Va.
- WARD, CHARLES EDWIN, President and General Manager, The Charles Ward Engineering Works, Charleston, W. Va.

- WARREN, OGLE TAYLOR, 19 Alexandrine Ave. West, Detroit, Mich.
- WARRINGTON, JAMES N., Mechanical Engineer, 1419 Dominis St., Honolulu, Hawaii.
- WATERHOUSE, WILLIAM E., Naval Architect and Engineer, 15 Whitehall St., New York.
- WATERS J. W. LOWRY, 114 Lafayette Ave., Brooklyn, WATT, RICHARD M., Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.
- WATTERSON, WILLIAM WALLACE, Superintendent of Construction, Pittsburg Steamship Co., Rockefeller Bldg., Cleveland, O.
- Watts, Philip, Sir, K. C. B., Director of Naval Construction of the British Admiralty, 10 Chelsea Embankment, London, S. W., England.
- WEAVER, WILLIAM D., Mechanical Engineer, 55 Demarest Ave., Englewood, N. J.
- WEED, GEORGE E., 32 West 40th St., New York.
- WELIN, AXEL, Hopeton House, Lloyds Av, London, Eng. WEST, CHARLES C., Vice-President and Manager, Mani
 - towoc Dry Dock Co., Manitowoc, Wis.
- Westmacott, Alfred, Managing Director, Westmacott, Stewart & Co., Ltd., St. Helens, Isle of Wight, Eng.
- WETHERBEE, CHARLES PHELPS, Supt. Engineer, Bath Iron Works, Bath, Maine.
- Wheeler, Clifton Harold, C. H. Wheeler Mfg. Co., Lehigh Ave. and 18th St.; residence, 521 Lincoln Drive, Pelham, Philadelphia, Pa.
- WHEELER, FREDERICK M., Wheeler Condenser & Engineering Co., 90 West St., New York; residence, 159 Gates Ave., Montclair, N. J.
- WHEELER, HARRY, Supt. Engineer, Lamport & Holt Line, Pier 8, Brooklyn, N. Y.
- WHITAKER, MORRIS M., Whittelsey & Whitaker, 11 Broadway, New York.

- WHITHAM, JAY M., Mechanical Engineer, 6070 Bullitt Bldg., Philadelphia, Pa.
- WHITTLESEY, H. NEWTON, Whittlesey & Whitaker, 11 Broadway, New York City.
- WILEY, CLARENCE W., Marine Superintendent, Boston S. S. Co., 232 Globe Block, Seattle, Wash.
- WILKINSON, HENRI, Chief Surveyor, Bureau Veritas, 17 State St., New York.
- WILLARD, CHARLES FRANKLIN, Fourth Assistant Examiner, U. S. Patent Office, 1333 Fairmount St., Washington, D. C.
- WILLIAMS, FAIRFAX, General Manager, The Washington Engineering Co., 611 Oriental Block, Seattle, Wash.
- WILLIAMS, GEORGE H., Master Machinist, Steam Engineering Department, Navy Yard, League Island, Pa.
- WILLIAMS, LLEWELLYN, Supt. of Refrigeration, United Fruit Co., 131 State St., Boston, Mass.
- WILLIAMS, LOUIS, General Superintendent, Superior Shipbuilding Co., Superior, Wis.
- WILLIAMSON, JOHN D., Jr., Vice-President, Williamson Bros., Aramingo Ave. and Cumberland St., Philadelphia, Pa.
- WINANT, WM. E., Leading Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.
- WINSHIP, JAMES G., Mechanical Engineer and Salesman, Geo. F. Blake Mfg. Co., 114 Liberty St., New York. Residence—1248 Pacific St., Brooklyn, N. Y.
- Woon, WILLIAM J., Naval Architect, Ship Surveyor and Consulting Engineer, 543 Postal Telegraph Building, 280 La Salle St., Chicago, Ill.
- Woods, Allen D., Naval Architect, 50 Church St., N. Y. Woody, William Henry, Jr., 2818 East Franklin St., Richmond, Va.

Y

YAMAMOTO, NAGAKATO, Chief Draughtsman, Ship Dept., Mitsu Bishi Dock Yards & Engine Works, Nagasaki, Japan.

YEOMANS, CLIFTON, 438 Louisiana St., Vallejo, Cal. Young, James, Chief Draughtsman, Hull Dept., New York Shipbuilding Co., Camden, N. J.

\mathbf{z}

- ZAHM, FRANK BAKER, Naval Constructor, U. S. N., Inspector of Electrical Material, Construction and Repair, General Electric Co., Schenectady, N. Y.
- ZEITER, FRIEDRICH, Lecturer on Marine Engineering at Technikum, Bulowstr 22, Bre.nen, Germany.
- ZIRPEL, RUDOLPH, Supt. of Construction, U. S. Light House Service, house, 525 3d St., N. E., Washington, D. C.



ASSOCIATES

A

- Ackerson, James L., Assistant Naval Constructor, U. S. N., Navy Yard, New York.
- Adams, Roger P., Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va.
- ALDRICH, HERBERT L., President and Manager, International Marine Engineering, Whitehall Building, 17 Battery Place, New York.
- ALLAN, ERNEST A., Draughtsman, 97 Oak St., Bath, Me. ALLEN, W. W., Consulting Engineer, Room 1707, 42 Broadway, New York.
- AMORY, JOHN J., President, Gas Engine & Power Co., and Charles C. Seabury Co., Consolidated, Morris Heights, N. Y.
- ANCKER, WALTER, Supt. Floating Equipment, B. & O. R. R. Co., Camden Station, Baltimore, Md.
- Andresen, Elliott I. G., Asst. Manager, Holzapfel's Composition Co., 18 Broadway, New York.
- Andrews, Jacob R., President Hyde Windlass Co., Bath, Maine.
- Arnold, Conway H., Rear Admiral, U. S. N., care Navy Department, Washington, D. C.
- ATKINS, LEW M., Ensign, U. S. N., Navy Yard, Boston, Mass.

В

- BAILEY, JOHN E., Asst. Naval Constructor, U. S. N., Navy Yard, Pensacola, Fla.
- Balls, William H., Instructor of Mathematics and Drawing, Philadelphia Trades School, Philadelphia, Pa. Barbey, Henry G., Naval Designer, 52 Pine St., N. Y.

- Barnes, A. T., Contracting Engineer, B. F. Sturtevant Co., Sharon, Mass.
- BARRE, JOSEPH, of Jos. Barre & Co., 25 Fulton St., New York.
- BARRY, EDWARD B., Captain, U. S. N., Supervisor of Naval Auxiliaries, Navy Yard, Brooklyn.
- Bates, George Harold, 23 Holly St., Cranford, N. J.
- BATTIM, THOMAS WILSON, P. O. Box 207, Philadelphia, Pa.
- BATTLES, DONALD R., Assistant Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.
- Bent, Stedman, Purchasing Agent, Maryland Steel Co., 306-311 Girard Bldg., Philadelphia, Pa. House—Overbrook. Pa.
- BICKFORD, ROBERT G., General Counsel, Newport News S. B. & D. D. Co., Newport News, Va.
- Bisset, Guy Aloysius, Asst. Naval Constructor, U. S. N., Navy Yard, Norfolk, Va.
- BLISS, JOHN LORD, John Bliss & Co., Manufacturer of Marine Chronometers and Nautical Instruments, 128 Front St., New York.
- BLOOMSBURG, HARRY BROWN, Draughtsman, Baltimore Shipbuilding and Dry Dock Co. House address, 425 N. Carey St., Baltimore, Md.
- Boas, Emil L., General Manager, Hamburg-American Line, 45 Broadway, New York,
- BORDER, LEE SCOTT, Assistant Naval Constructor, U. S. N., Navy Yard, Boston, Mass.
- BORIR, ADOLPHE E., Vice-President, New Jersey Zinc Co., 71 Broadway, New York.
- BOUCHER, HORACE E., Mechanical and Model Shops, 91 Faiden Lane, New York.
- Bowes, Thomas D., Jr., M. E. Naval Architect, 308 Walnut St., Philadelphia.

BOYD, WILLIAM, Second Leading Draughtsman, Cramps' Shipyard. Philadelphia, Pa.

Bradfield, George K., Special Representative, Vacuum Oil Co., 29 Broadway, New York.

House—Hackensack, N. J.

BRINTON, FREDERICK S., Naval Architect, Marion Building. Seattle. Wash.

Brown, William L., Chairman, American Shipbuilding Co., 1740 Commercial Bank Building, Chicago, Ill.

Brown, Wilson, 78 Front St., Binghamton, N. Y. Brownson, Willard H., Rear-Admiral, U. S. N. (re-

tired), 1751 N St., N. W., Washington, D. C. BRUTON, JOHN F., Foreman Machinist, Fore River Ship-

BRUTON, JOHN F., Foreman Machinist, Fore River Shipbuilding Co., Quincy, Mass.

BRYAN, HENRY F., Lieut.-Commander, U. S. N., No. 6 Sampson Row, Naval Academy, Annapolis, Md.

Buckeley, Charles William, Ship Designer, 5 Rockview Ave., Plainfield, N. J.

Bucknam, Captain R. D., U. S. Embassy, Constantinople, Turkey.

Burnham, John W., Chief Carpenter, U. S. N., Navy Dept., Washington, D. C.

Burton, Herbert, Draughtsman, Charleston, box 82, Wash.

BUTTS, CHARLES SPOONER, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

C

CALLIS, D. MILLARD, Estimator, Maryland Steel Co., Marine Department, Sparrow's Point, Md.

CAVERLY, LEROY EUGENE, 1116 Alice St., Oakland, Cal. CHAMBERS, WASHINGTON I., Commander, U. S. N., Navy Dept., Washington, D. C.

- CHESTER, ARTHUR T., The Acolian Co., 362 Fifth Ave., New York.
- CHURCH, EDWIN F., Jr., Professor of Mechanical Engineering, West Virginia University, Box 622, Morganstown, W. Va.
- CHURCH, Wm. CONANT, Editor, Army and Navy Journal, New York.
- CLIFFORD, JAMES A., Electrical Engineer and General Salesman, B. F. Sturtevant Co., Jamaica Plain, Boston, Mass.
- CLYDE, THOMAS, Ship Owner, 24 State St., New York.
- CLYDE, WILLIAM P., Ship Owner, 17 State St., New York.
- COLE, WINTHROP, Mechanical Engineer, Engineering Experiment Station, N. Y., Naval Academy, Annapolis, Md.
- COX, LEONARD MARTIN, Civil Engineer, U. S. N., Navy Yard, New York.
- CRAIG, JOSEPH E., Rear-Admiral, U. S. N., 1729 G St., Washington, D. C.
- COURT, ALVAH B., Assistant Naval Constructor, U. S. N., Navy Yard, Boston, Mass.

D

- DALTON, HENRY G., Managing Partner, Pickands, Mather & Co., Western Reserve Bldg., Cleveland, O.
- DAVIDS, WILLIAM CULVER, Mechanical and Structural Engineer, 65 Francisco Ave., Rutherford, N. J.
- DAY, MAXWELL W., Assistant Engineer, Power and Mining Dept., General Electric Co., Schenectady, N. Y.
- DEMING, RICHARD, care American Surety Co., 100 Broadway, New York.
- DENISE, EDWIN S., Fairbanks Morse Co., 32 Cortlandt St., New York,
- DE ZAFRA, CARLOS, Department of Costs, Gas Engine and Power Co., and C. L. Seasbury & Co., Morris Heights, N. Y.

Dick, Thomas B., Chief Draughtsman, C. & R. Dept., Navy Yard, Mare Island, Cal.

DICKIE, JAMES SPIERS, 36 Stewart St., San Francisco, Cal.

DIMOCK, WM. DE WOLF, Dixondale Gloucester Co., Va. Dock, Herman, Mechanical Engineer, Hope Valley, R. I.

Dolan, Thomas, Director, Wm. Cramp & Sons' S. & E.

B. Co., U. G. I. Bldg., Philadelphia, Pa.

Donaldson, Henry F., 1402 Broadway, New York.

DONOVAN, RICHARD J., American Bridge Co., 1456 Frick Bldg., Pittsburg, Pa.

DOWNEY, WALLACE, President, Kingsley Water-Tube Boiler Co., 21 State St., New York.

DRAKE, FRANKLIN J., Rear Admiral, U. S. N. (Retired), Army and Navy Club, Washington, D. C.

Druley, Waldo P., Assistant Naval Constructor, U. S. N., Navy Yard, New York.

Duncan, Wm. B., Jr., Havemeyer Bldg., Cortlandt St., New York.

DUNTLEY, JOHN WHEELER, President, Chicago Pneumatic Tool Co., 1019 Fisher Building, Chicago, Ill.

E

EATON, JAMES W., General Manager and Treasurer, New York Kerosene Oil Engine Co., 31 Burling Slip, New York.

EGGERT, ERNEST FREDERICK, Naval Constructor, U. S. N., Navy Yard, Boston, Mass.

Engeman, W. A., President, Benvenue Granite Co., 41 Park Row, New York.

ETTER, HARRY B., Designing Draughtsman, Wm. Cramp & Sons' S. & E. B. Co., 2326 N. 17th St., Philadelphia, Pa.

EVANS, ROBLEY D., Rear Admiral, U. S. N., 324 Indiana Ave., Washington, D. C.

FARRINGTON, W. C., Vice-President, Pacific Coast S. S. Co., San Francisco, Cal.

FERGUSON, WILLIAM BURDER, JR., Assistant Naval Constructor, U. S. N., Fore River Shipbuilding Co., Quincy, Mass.

FIELD, EDWARD P., Naval Architect and Engineer, 422
West End Ave., New York.

FITCH, EDWIN O., JR., Assistant Naval Constructor, U. S. N., Navy Yard, Boston, Mass.

FOGARTY, W. B., Assistant Naval Constructor, U. S. N., New York Shipbuilding Co., Camden, N. J.

FRETZ, PAUL H., Assistant Naval Constructor, U. S. N., Navy Yard, Boston, Mass.

FROST, ELIHU B., Treasurer and Manager, Electric Boat Co., 11 Pine St., New York.

FURER, JULIUS AUGUSTUS, Assistant Naval Constructor, U. S. N., Navy Yard, Charleston, S. C.

C

GANTT, HENRY L., Consulting Engineer, 65 Summit St., Pawtucket, R. I.

GARDINER, GEORGE N., 15 William St., New York.

GARDINER, GEORGE N., JR., George N. Gardiner & Son, 15 William St., New York.

GARDINER, BENTLEY, George N. Gardiner & Son, 15 William St., New York.

GARTLEY, ALONZO, General Manager, Hawaiian Electric Co., Honolulu, H. I.

GATEWOOD, RICHARD D., Assistant Naval Constructor, U. S. N., Navy Yard, Mare Island.

GILLIS, HARRY A., Consulting Engineer, Home Life Building, Washington, D. C.

GIPS, ADRIAN, General Agent, Holland-America Line, 39 Broadway, New York.

- GOODRICH, ALBERT W., President Goodrich Transportation Co., foot of Michigan Ave., Chicago, Ill.
- GOULDER, HARVEY D., Proctor in Admiralty, 915 Rockefeller Bldg., Cleveland, O.-
- GREENE, S. CUYLER, Draughtsman, Hyde Windlass Co., P. O. Box 1015, Bath, Me.
- GRISCOM, CLEMENT, A., JR., President, Griscom-Spencer Co., 90 West St., New York.
- GROVE, HENRY S., President, The Wm. Cramp & Sons' S. & E. B. Co., Philadelphia, Pa.

H

- HAGSTROM, O. P., Leading Draughtsman, Newport News S. B. & D. D. Co., P. O. Box 624, Newport News, Va.
- HALL, FRANK DAVID, Assistant Naval Constructor, U. S. N., Assistant to the Superintending Constructor, Cramps Shipyard, Philadelphia, Pa.
- HAMNER, EDWARD C., JR., Assistant Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.
- HANSCOM, ISAIAH CLIFFORD, 69 Magazine St., Cambridge, Mass.
- HARRINGTON, CHAS. A., Assistant Naval Constructor, Navy Yard, Boston, Mass.
- HENRY, SIDNEY MORGAN, Assistant Naval Constructor, U. S. N., Navy Yard, Mare Island, Cal.
- HILKEN, PAUL GERHARD L., General Foreman, Hull Construction Marine Dept., Maryland Steel Co., Sparrow's Point, P. O. 1130, Baltimore, Md.
- Howard, Herbert S., Assistant Naval Constructor, Navy Yard, Boston, Mass.
- HYDE, JOHN S., President and General Manager, Bath Iron Works. Bath. Me.

IRELAND, ROBERT L., M. A. Hanna & Co., Perry-Payne Building, Cleveland, O.

IRVING, WASHINGTON, 320 Sansome St., San Francisco, Cal.

J

JONES, FRANK BOWNE, Yacht Agent and Ship Broker, 29 Broadway, New York.

JOY, RICHARD P., President, National Bank of Commerce, 510 Penobscot Building, Detroit, Mich.

JUPP, ALFRED J., Agent, The Lukenheimer Co., 68 Fulton St., New York.

K

KATZENSTEIN, JACOB, Supt., L. Katzenstein & Co., 358 West St., New York.

KATZENSTEIN, MARTIN L., Manager, Marine Dept., International Steam Pump Co., 144 Liberty St., New York.

KEILHOLTZ, P. O., Secy. and Supt., The United Electric Light and Power Co., Merchant's Bank Bldg., Baltimore, Md.

Keller, Otto B., with Keuffel & Esser Co., 127 Fulton St., New York.

Kellogg, James W., Manager Marine Sales, General Electric Co., 10 Front St., Schenectady, N. Y.

Kemble, Parker H., President, Northern Connecticut Light and Power Co., Windsor Locks, Conn. Mail address, The Garde, Hartford, Conn.

KEMPFF, Louis, Rear Admiral, U. S. N. (retired), U. S. Navy Pay Office, San Francisco, Cal.

KINTNER, EDWIN G., Assistant Naval Constructor, Navy Yard, Norfolk, Va. Kirchhoff, C., Editor Iron Age, 14 and 16 Park Place, New York.

KNOX, HARRY G., Ensign, U. S. N., Navy Yard, Boston, Mass.

L

LAND, EMORY S., Assistant Naval Constructor, Navy Yard, New York, N. Y.

LARKIN, FRANK PROVOOST, Draughtsman, Engineering Department, Fore River S. B. Co., Quincy, Mass.

LAWRENCE, GEORGE E., Barrett & Lawrence, Engineers, Bulliti Building, Philadelphia, Pa.

LAWTON, NEWBURY D., 60 Wall St., New York.

LINDSAY, JAMES G., SR. Member of James G. Lindsay & Co., Arcade Bldg., Philadelphia, Pa.

LONGSTRETH, CHARLES, President, U. S. Metallic Packing Co., 427 N. 13th St., Philadelphia, Pa.

LORD, FREDERICK KISSAM, Draughtsman, 105 Lord Ave., Bayonne, N. J.

LUNDIN, ANDREAS P., Manager, The Welin Quadrant Davit, 17 Battery Place, New York.

LYNCH, HENRY H., President, Hodge Boiler Works, East Boston, Mass.

LYNN, JAMES J., Submarine Signal Co. of Boston, Mass., Port Huron, Mich.

M

MACY, WILLIAM D., Secretary-Treasurer, N. Y. & Cuba Mail S. S. Co., 94 St. James Place, Brooklyn.

MARVIN, WINTHROP L., Journalist, 131 State St., Boston, Mass.

MASON, LEWIS ALBERT, Hull Constructor, American Bridge Co., Ambridge, Pa.

Mason, Newton E., Rear Admiral, U. S. N., Chief of the Bureau of Ordnance, Navy Dept., Washington, D. C.

- MATHEWSON, THOMAS S., Vice-Pres. and Mgr., Marine Machine and Conveying Co., 318 Broadway, New York. Send mail to St. Denis Hotel, Broadway and 11th St., New York.
- McGowan, Wm. Cullen, Asst. Draughtsman, Dept. of C. & R., Navy Yard, Pensacola, Fla.
- McGuire, James C., Consulting Engineer, 1410 Havemeyer Bldg., 50 Church St., New York.
- McIlvain, Edward M., President and General Manager, Robins Conveying Belt Co., 30 Church St., New York, New York.
- MCINTYRE, EDWARD, McIntyre & Henderson, Shipbuilders, Foot of Montgomery St., Baltimore, Md.
- McKay, George Theodore, Stearns & McKay, Naval Architects and Yacht Builders, Marblehead, Mass.
- McLean, Thomas C., Rear-Admiral, U. S. N., care of Navy Dept., Washington, D. C.
- McMillam, Gilbert N., Gorham, N. H.
- McQuesten, Fred, Vice-President, The George McQuesten Co., 27 Kilby St., Boston, Mass.
- MEEK, JOHN E., Care The H. W. Johns-Manville Co., 100
 William St., New York.
- MEEK, WENTWORTH W., Naval Architect, 59 Howard St., East Braintree, Mass.
- MEIGS, JOHN F., Engineer of Ordnance, Bethlehem Steel Co., South Bethlehem, Pa.
- MILLER, JACOB W., President, New England Navigation Co., Pier 19, North River, New York.
- MILLER, THOMAS I., Captain, 424 Second St., Brooklyn, N. Y.
- MITCHELL, JOHN, Vessel Owner, Mitchell & Co., Rockefeller Bldg., Cleveland, O.
- MOORE, HARRISON B., President, N. Y. Lighterage and Transportation Co., 26 Broadway, New York.

MORGAN, EDWIN D., 100 Broadway, P. O. Box 706, New York.

N

Nebolsine, Commander A. K., Naval Attache, Russian Embassy, Washington, D. C.

NEW, HARRY STEWART, Naval Architect and Marine Engineer, 139 Third St., Long Island City, N. Y.

Newberry, Truman H., Secretary of the Navy, Washington, D. C.

NIBLACK, ALBERT P., Commander "U. S. S. Hartford," Annapolis, Md.

NORTON, HAROLD F., Chief Draughtsman, Hull Department, Newport News S. B. & D. D. Co., P. O. Box 702, Newport News, Va.

O

O'CONNOR, BERNARD F., 3 Washington Ave., Brooklyn, N. Y.

ORCUTT, CALVIN B., President, Newport News Shipbuilding and Dry Dock Co., 1 Broadway, New York.

P

PAINE, CECIL E., Engineer, Hyde Windlass Co., Bath, Me. PETERSON, OTTO L., I Broadway, New York.

Petre, Axel E., General Manager, Midvale Steel Co., Philadelphia. Pa.

PHILLIPS, WILLIAM H., Manager, Marine Dept., F. W. Devoe & C. T. Reynolds Co., 101 Fulton St., New York.

PIEK, WILLIAM F., JR., Holland-America Line, Rotter-dam, Holland.

PIERCE, WALTER LOUIS, Secy. and General Manager, Lidgerwood Manfg. Co., 96 Liberty St., New York.

Powelson, Wilfrid Van Ness, Consulting Engineer, 60 Wall St., New York.

- RAOUF, H., Lieutenant, I. O. N., British P. O., Constantinople, Turkey.
- RAVEN, ANTON A., President, American Bureau Shipping and Atlantic Mutual Insurance Co., 51 Wall St., New York.
- RAYMOND, JAMES RICHARDSON, Raymond Releasing Hook, Room 315, 24 State St., New York.
- REA, SAMUEL, Third Vice-Pres., Pennsylvania R. R., Room 225, Broad St. Station, Philadelphia, Pa.
- RETZMANN, HEINRICH, Commander, I. G. N. Naval Attache, German Embassy, Washington, D. C.
- RICE, HENRY, Naval Architect and Consulting Engineer, 202 Main St., Buffalo, N. Y.
- RICHARDSON, EUGENE M., Vice-Pres., Sherwin-Williams Co., Cleveland, O.
- RICHARDSON, HOLDEN C., Assistant Naval Constructor, U. S. N., Newport News S. B. and D. D. Co., Newport News, Va.
- ROGERS, WALTER H., Draughtsman, Hull Construction, Wm. Cramp & Sons S. & E. B. Co., Philadelphia, Pa.
- Ross, Charles E., Engineer, 121 West 79th St., New York.
- Rossow, Ernest Frederick, Draughtsman, C. & R. Dept., Navy Yard, Mare Island, 908 York St., Vallejo, Cal.
- ROWEN, JOHN H., Lieut.-Commander, U. S. N., Naval Magazine, Fort Mifflin, Pa.
- RYDEN, ROY W., Assistant Naval Constructor, Navy Yard, Portsmouth, N. H.

S

SABIN, ALVAH HORTON, 432 Sanford Ave., Flushing, N. Y. SATTERLEE, HERBERT L., Assistant Secretary of Navy, Washington, D. C.

- Schlabach, Ross P., Assistant Naval Constructor, U. S. N., Navy Yard, Charleston, S. C.
- Schooler, Clifford Vannice, Assistant Draughtsman, 511 County St., Portsmouth, Va.
- Schreidt, Frank, President, Safety Cylinder Valve Co., Mansfield, O.
- Sebrele, Uriel, Rear-Admiral, U. S. N., Commanding Special Service Squadron, U. S. F. S. Tennessee; care Navy Dept., Washington, D. C.
- SHIELDS, HENRY B., Draughtsman, Office of the Superintending Constructor, New York Shipbuilding Co., Camden, N. J.
- SIMMERS, CLAYTON M., Assistant Naval Constructor, U. S. N., Navy Yard, Puget Sound, Wash,
- SMITH, ALEXANDER R., 2271 Aqueduct Ave., Bronx Borough, New York.
- SMITH, ALFRED G., General Manager, N. Y. and Cuba Mail Steamship Co., Pier 14, East River, New York.
- SMITH, TOWNSEND J., Hull Draughtsman, T. S. Marvel & Co., Newburgh, N. Y.
- SMITH, WILLIAM A. F., President, Grissinger Regulator Co., 203 Greenwich St., New York.
- SNYDER, HENRY S., Bethlehem Steel Co., South Bethlehem, Pa.
- SPEAKMAN, EDWARD M., Manager, Marine Engineering Dept., care Sir W. G. Armstrong, Whitworth & Co., Elswick Works, Newcastle-upon-Tyne, England,
- SPRAGUE, F. J., Consulting Engineer, 165 Broadway, New York.
- STANTON, SAMUEL WARD, Publisher, Nautical Gazette, 30 West 33d St., New York.
- STARKE, FREDERICK C., 173 25th St., Milwaukee, Wis.
- STEPHENS, WILLIAM P., Editor, Lloyds Register of American Yachts, 32d St. and Ave. A, Bayonne, N. J.
- STOKES, ANSON PHELPS, 100 William St., New York.

Tams, J. Frederic, Ship Broker and Marine Contractor, 52 Pine St., also 4 Lexington Ave., New York.

THOMAS, S. B., Lieutenant, U. S. N., care Navy Dept., Washington, D. C.

THOMPSON, ROBERT M., 43 Exchange Place, New York.

THRESHER, ALFRED ADDISON, Consulting Engineer, 29
Broadway, New York.

Toch, Henry M., Manufacturer of Marine Cements and Ship Bottom Paints, 320 Fifth Ave., New York.

TODT, EDWARD GEORGE, Vice-President and General Manager, Gunnell Machine Co., Manitowoc, Wis.

V

Vanderbilt, Aaron, Vice-President, Wheeler Condenser & Engineering Co., 42 Broadway, New York.

Van Duzer, Louis S., Commander, U. S. N., Navy Department, Washington, D. C.

VAN KUEREN, ALEXANDER H., Assistant Naval Constructor, U. S. N., Philadelphia, Pa.

VEIT, RICHARD C., Manager, Lignterage Dept., Standard Oil Co., 26 Broadway, New York.

VREELAND, CHARLES EDWARD, Captain, U. S. N., commanding U. S. S. Kansas, care Navy Dept., Washington, D. C.

W

WALES, CHARLES M., Manager, Cleveland City Forge & Iron Co., 11 Broadway, New York.

WATERS, GEORGE HENRY, Secretary, F. A. Verdon Co., West New Brighton, S. I., N. Y.

WEINZ, CHARLES J., Constructor, Heat and Cold Insulation, 538 East 18th St., New York.

Welles, Roger, Jr., Commander, U. S. N., Navy Department, Washington, D. C.

- Westervelt, George C., Assistant Naval Constructor, U. S. N., Navy Yard, N. Y.
- WHITE, WILLIAM P., Commander, U. S. N. care Wolverine, Erie, Pa.
- WHITE, GEORGE A., Asst. General Manager, Hudson River Day Line, Desbrosses St. Pier, New York.
- WHITON, CHAUNCEY GILBERT, Treasurer, The New Bedford, Martha's Vineyard and Nantucket Steamboat Co., P. O. Box 284, 7 Commercial St., New Bedford. Mass.
- WIERDSMA, JOHN R., Netherlands Steam Navigation Co., Rotterdam, Holland.
- WILLIAMS, HENRY, Naval Constructor, U. S. N., Bu. C. and R., Navy Dept., Washington, D. C.
- Wise, William C., Rear-Admiral, U. S. N. (retired), Navy Dept., Washington, D. C.
- Wood, David, Draughtsman, C. & R. Dept., Navy Yard, New York.
- Wood, Henry A. Wise, Mechanical Engineer, 1 Madison Ave., New York.
- Wood, Howard, 1016 Spruce St., Philadelphia, Pa., or Conshohocken, Pa.
- WOODRUFF, J. W., Assistant Naval Constructor, U. S. N., Navy Station, New Orleans, La.
- WRIGHT, ROBERT KEMP, Port of Spain, Trinidad, B. W. I. WRIGHT, WILLIAM LLOYD, Draughtsman, Bureau of C. &
 - R., Navy Dept., Washington, D. C.
 House—19080 G. St., N. W.
- YATES, ISAAC IRVING, Assistant Naval Constructor, U. S. N., Navy Yard, Boston, Mass.



JUNIORS

A

ANDERSON, ROBERT EARLE, C. E., Draughtsman, Bureau of C. & R., Navy Dept., Washington, D. C.

R

BAILEY, DANIEL, Ship Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

Balley, Robert W., Ship Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

BAGGER, FRANK E., Draughtsman, care U. S. Revenue Cutter Service, Navy Department. Home—Fort Hamilton Ave. and 70th St., Brooklyn.

N. Y.

BAUM, ARTHUR ELMO, Draughtsman, Hull Dept., Bath Iron Works, 95 Union St., Bath, Me.

BERLINER, RICHARD W., Hedden Construction Co., 1
Madison Ave., New York.

Mail address-174 West 79th St., New York.

Bretteville, Alexander de, Manager, Main St. Iron Works, 163 Main St., San Francisco, Cal.

Briner, Emil Amandus, M. E., 639 Bourse Building, Philadelphia, Pa.

Brooks, Louis C., Master Electrician, C. & R. Dept., Navy Yard, Boston, Mass.

Brown, Howard H., Editor, Boiler Maker, 17 Battery Place, New York.

Burkhard, John C., Student Naval Architecture, Sibley College, Ithaca, N. Y.

C

CALLAHAM, CONSTANTINE D., Yacht Designer, San Pedro, Cal.

- CASWELL, W. B., Draughtsman, 253 West 127th St., New York.
- COLBY, HALDWELL S., Chief Draughtsman, Mosher Water Tube Boiler Co., 30 Church St., New York.
- COOK, FAYETTE A., Draughtsman, Bu. C. & R., Navy Dept., Washington, D. C.
- CRAIN, JOHN J., Electrical Engineer, Fore River S. B. Co., Quincy, Mass.
- CRANE, FRANK H., Supt., Theo. Crane's Sons Dry Dock & Shipyard, Erie Basin.

 House—295 Garfield Place, Brooklyn, N. Y.
- CROSBY, RALPH W., of Daniel Crosby & Son, Osterville, Mass.
- CURTIS, ARTHUR V., Draughtsman, C. & R. Dept., Navy Yard. Washington, D. C.
- CUTLER, EDWARD OSGOOD, Draughtsman, Office of Superintendent of Construction, Bath Iron Works, Bath, Me.

D

- DAMON, EDWARD ORNE, JR., Superintendent of Construction, U. S. Light-House Establishment, Washington, D. C.
- Davis, Matthews Erastus, 50 Lake St., Saranac Lake, N. Y.
- Davis, Oliver M., P. O. 50 Lake St., Lawrence Lake, N. Y.
- DeGraw, Harold Mason, Draughtsman, Hull Drawing Room, Newport News S. B. & D. D. Co., Newport News, Va.
- DIMM, WAYNE T., Assistant Chief Draftsman, Engineering Estimating Dept., Newport News S. B. and D. D. Co., Newport News, Va.
- DOUGHERTY, HUGH, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

Ellis, Walter L., Draughtsman, Hyde Windlass Co., Bath, Me.

ENGERDT, JOHN ARNHOLD, Kaponniergot No. 3, Gothenburg, Sweden.

ERDMAN, GEORGE K., Draughtsman, Maryland Steel Co., Sparrow's Point, Md.

ERISMANN, MARTIN C., Draughtsman, Hull, Fore River S. B. Co., Quincy, Mass.

Evans, John Lancaster, Ship Draughtsman, Bath Iron Works, 212 Centre St., Bath, Me.

F

FERNARD, BENJAMIN G., University Club, Madison, Wis. Fils, Ernest, Draughtsman, John N. Robbins Co., Erie Basin, Brooklyn, N. Y.

FISHER, LEE DAVID, Chief Engineer, Fisher Construction Co., Joliet, Ill.

FRENCH, FRANCIS J., Ship Draughtsman, C. & R. Dept., Naval Station, New Orleans, La.

FRIEBELE, JOHN F., Draughtsman, 272 W. 141st St., New York.

G

GRIESHABER, HUGO EUGENE, Chief Hull Draughtsman, Electric Boat Co., Quincy, Mass.

H

HALL, FRANCIS GRANGER, JR., Lackawanna Mfg. Co., Newburgh, N. Y.

HAMMOND, JAY D., Draughtsman, 156 Richmond Ave., Port Richmond, S. I.

HAUPT, JOHN, 198th St., Bedford Park, N. Y.

HERRICK, DAYTON E., Assistant Marine Inspector, U. S. Lloyds, 3 South William St., New York.

Hewins, Lyman Foster, Draughtsman, C. &. R. Dept., Navy Yard., Washington, D. C.

HIBBARD, HARRY LYMAN, Electrical Engineer, Cutler-Hammer Mfg. Co., Wilwaukee, Wis.

Hunnewell, Fred. A., Chief Draughtsman, Office of Suptg. Constructor, N. Y. Shipbuilding Co., Camden, N. J.

HUNT, HERMAN REYNOLDS, Instructor of Naval Architecture, Mass. Inst. of Tech., Boston, Mass.

Hussey, James W., Naval Architect, 1130 Walnut St., Philadelphia, Pa.

J

JENNINGS, ALFRED C., Hull Draughtsman, Harlan & Hollingsworth Co., Wilmington, Del.

Jonson, Herman, Consulting and Contracting Engineer, 79 E. 130th St., New York.

Johnson, Eads, N. Y. Agent, N. Y. Shipbuilding, 12 Broadway, New York.

K

KEENAN, WALTER COOK, Draughtsman, 1034 Milan St., New Orleans, La.

Koon, Sidney Graves, 324 Meyran Ave., Pittsburg, Pa.

L

LEITCH, ALBERT CLARK, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

LESLEY, EVERETT P., Instructor in Mechanical Engineering, Stanford University, Cal.

Lewis, Arthur Schultz, M. E., 910 Prospect Place, Brooklyn, N. Y.

LUEHRS, DANIEL MICHAEL, Chief Engineer, McCreery Engineering Co., Toledo, Ohio.

M

MARTIN, GILBERT DARLING, Marine Mfg. & Supply Co., 207 Neilson St., New Brunswick, N. J.

McComb, Samuel Deems, Surveyor and Adjuster, Chas. M. Hall & Co., 60 Wall St., New York.

Residence-47 Lafayette Ave., Port Richmond, N. Y.

MEEKER, H. L., Draughtsman, C. & R. Dept., Navy Yard. House—96 Etna St., Brooklyn, N. Y.

MERRILL, AMBROSE MOODY, Draughtsman, C. & R. Dept., Navy Yard, New York.

MITCHELL, LELAND R., Marine Engine Draughtsman, Bath Iron Works, 476 Middle St., Bath, Me.

MUSHAM, HARRY A., Assistant Ship Draughtsman, Navy Yard, Washington, D. C.

N

Newell, William Stark, Asst. to Suptg. Engr., Bath Iron Works, Bath, Me.

NORTON, WILLIAM J., Assistant Secretary, Public Service Commission, Tribune Building, New York; residence, 26 East 48th St.

О

O'Donnell, Charles F., Boatbuilder, C. & R. Dept., Navy Yard.

House-56 Russell St., Brooklyn, N. Y.

OSBORN, EDWARD B., Foreman with W. R. Osborn, Croton-on-Hudson, N. Y.

OVERMAN, AUSTIN EVERETT, 429 Penn St., Camden, N. J.

\mathbf{P}

POTTER, JOSEPH S., Hull Draughtsman, Gas Engine & Power Co., and Charles L. Seabury Co., Consolidated, Morris Heights, N. Y.

READ, WALTER AUGUSTINE, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

RICE, WINTHROP M., Draughtsman, care H. J. Gielow, 50 Broadway. New York.

RIMMER, A. CYRIL, Engine Draughtsman, Newport News S. B. & D. D. Co., Newport News, Va.

9

SIMPSON, DWIGHT S., Muskegon, Mich.

SIMPSON, ROBERT C., Draughtsman, Hull Dept., Newport News S. B. & D. D. Co., Newport News, Va.

SIVARD, EMAR L. M., Draughtsman, Welin Quadrant Davit Co., 17 Battery Place, New York.

SMITH, GRANVILLE, Hull Estimator, Marine Department, Maryland Steel Co., Sparrow's Point, Md.

SMITH, JOSEPH DICKINSON CLAIR, Hartington, Neb.

STEVENS, EDWIN A., JR., 15 William St., New York.

STUART, DONALD, 85 Chambers St., New York.

SULLIVAN, JOHN F., Asst. Engineer, Public Service Commission, Tribune Bldg., New York.

SWASEY, A. LORING, of Swasey, Raymond & Page, Naval Architects and Engineers, Colonial Building, Boston, Mass.

T

TAPPEN, ALEXANDER B., Vice-President, Consolidated Water Co., 263 West 73rd St., New York.

THUNBERG, ERNST, JR., Superintendent of Gun Works, Bafors-Guttspong Co., Bafors, Sweden.

Towle, Howard C., Standard Oil Co., 26 Broadway, New York,

U

Uzelmeier, William, 7238 Bryon St., Philadelphia, Pa.

W

Wallace, William L., Jr., Draughtsman, Manitowoc Dry Dock Co., 412 North Park St., Manitowoc, Wis. Wassilief, Wassily W., 1521 North 6th St., Philadel-

phia, Pa.

WATTS, J. MURRAY, Yacht Designer and Builder, 808 Brown Bros. Building, 4th and Chestnut Sts., Philadelphia, Pa.

Webb, Thomas E., Jr., Hull Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

WHITAKER, FRANK B., 1421 U. St., N. W., Washington, D. C.

WHITE, WILLIAM WESLEY, Draughtsman, 1001 Union Trust Building, Baltimore, Md.

WHITEHOUSE, FREDERICK CHARLES, Draughtsman, C. & R. Dept., Navy Yard, Brooklyn, N. Y.

WHITTELSEY, DANIEL I., Whittelsey and Whitaker, 11 Broadway, New York City.

WIGHT, ROGER WILLARD, 290 Clinton Ave., Brooklyn, N. Y.

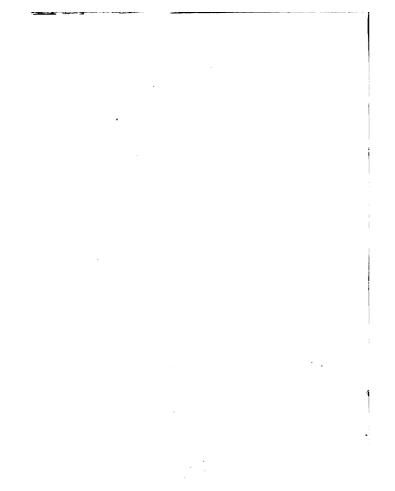
WRIGHT, HENRY C., JR., Hull Draughtsman, Bath Iron Works, Bath. Me.

Y

YEOMANS, CLYDE, Cor. Mott & Hollywood Aves., Far Rockaway, N. Y.

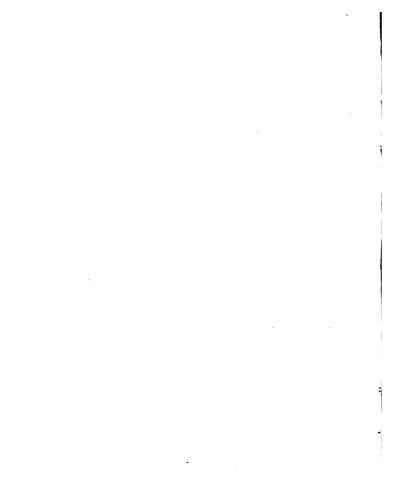
Young, William J. J., Superintending Constructors office, Fore River S. B. Co., Quincy, Mass. Address—10 Sewall St., Dorchester, Mass.





CONSTITUTION AND BY-LAWS —————————

Naval Architects and Marine Engineers



CONSTITUTION AND BY-LAWS

ARTICLE I.

Name and Object.

- I. The name of the Association shall be, "THE SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS."
- 2. Its object shall be the promotion of the art of shipbuilding, commercial and naval.
- 3. In furtherance of this object, annual meetings shall be held for the reading and discussion of appropriate papers and interchange of professional ideas, thus making it possible to combine the results of experience and research on the part of shipbuilders, marine engineers, naval officers, yachtsmen, and those skilled in producing the material from which ships are built and equipped.

ARTICLE II.

Membership.

1. The Society shall consist of Members, Associates, Juniors, Honorary Members and Honorary Associates.

- 2. Members.—(I) The class of Members shall consist exclusively of Naval Architects, Marine and Mechanical Engineers, including Professors of Naval Architecture or Mechanical Engineering in colleges of established reputation.
- (2) A Candidate for this class must not be less than twenty-five years of age and comply with the following regulations: He shall submit to the Council a statement showing that he has been engaged in the practice of his profession, in a responsible capacity, for at least three years, and setting forth the grounds upon which he bases his claim to membership. This statement shall be signed by three members, who shall certify to their personal knowledge of the candidate and approval of his statement.
- (3) In the case of persons not American citizens, the signatures of three members shall be required in confirmation of their personal knowledge of the candidate's scientific attainments.
- (4) If three-fourths of the members of the Council present are in favor of the admission of the candidate his name shall be submitted to the members of the Society at the next meeting; the voting to be by ballot, should a ballot be demanded.
- 3. Associates.—(1) The class of Associates shall consist of all persons who, by profession,

occupation, or scientific attainments, are qualified to discuss the qualities of a ship.

- (2) Candidates for this class shall submit to the Council a written statement of their qualifications for membership. If considered by three-fourths of the Council present duly qualified for associate membership their names shall be submitted to the Society at the next meeting, to be voted upon by the Members and Associates; voting to be by ballot, should a ballot be demanded.
- 4. The proportion of favorable votes for deciding the election of Members and Associates shall be at least four-fifths of the number recorded.
- 5. Juniors.—(I) The class of Juniors shall consist of graduates of technical schools of established reputation, or persons who have had not less than two years' practical experience in marine engine works or shipyards.
- (2) Candidates must be at least eighteen years of age and certify their intention to continue in the profession and become naval architects and marine engineers.
- (3) Juniors shall be eligible for transfer to the class of Members after fulfilling the necessary conditions.
 - (4) The admission of Juniors shall be by a

favorable vote of three-fourths of the members of the Council present.

- (5) Juniors shall have no voice in the government of the Society or admission of members.
- 6. Honorary Members and Honorary Associates.—The Council may elect Honorary Members and Honorary Associates, the total number not to exceed twenty-five. They shall be persons of acknowledged eminence in their profession upon whom the Council may see fit to confer an honorary distinction.

ARTICLE III.

Dues.

I. The entrance fees, payable on admission to the Society, shall be as follows:

Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates, no fees.

- 2. The annual dues shall be as follows:
- Members and Associates, ten dollars; Juniors, five dollars; Honorary Members and Honorary Associates, no dues.
- 3. A member transferred from one grade to another shall pay the difference between the entrance fees of the two grades, and his annual dues shall be those of the grade to which transferred.

- 4. The annual contributions shall be payable in advance on the first day of January. The Secretary shall notify each member of the amount due for the ensuing year at the time of giving notice for the annual meeting. On election each member shall pay his entrance fee and annual dues for the current year and be entitled to rereive the proceedings of the annual meeting of the year during which he is elected.
- 5. Members and Associates can compound for all future dues and become Life Members or Life Associates by making a single payment of two hundred dollars and signing an agreement to conform to any future amendments to the Constitution and By-Laws.
- 6. Members are entitled to no return fees upon severing their connection with the Society.
- 7. Any member whose dues are more than three months in arrears shall be notified by the Secretary. Should his dues become six months in arrears he shall be again notified by the Secretary and his rights as a member suspended. Should his dues become one year in arrears the delinquent member shall forfeit his membership in the Society unless the Council may deem it expedient to extend the time of payment.
- 8. The Council may, in its discretion, temporarily suspend the annual payment of dues by any

member whose circumstances have become such as to make such payment impossible, and may, under similar circumstances, remit the whole or part of dues in arrears.

- 9. No name shall be entered on the rolls as Member, Associate or Junior, nor shall the privileges of membership be enjoyed until all dues shall have been paid; if the payment be delayed for more than six months from the date of election, the same shall be void unless the Council otherwise direct.
- 10. Should the expulsion of any member be judged expedient by five or more members, they must draw up and sign a proposal requesting such expulsion, delivering the same to the Secretary, to be laid before the Council.
- (2) If the Council do not find reason to concur in the proposal, no entry thereof shall appear in the minutes, nor shall any public discussion thereon be permitted.

(3) If, however, the Council find the charges contained in the proposal for expulsion substantiated, the accused member shall be notified and given an opportunity to resign. If he avails himself of this privilege, no entry shall be made on the minutes nor public discussion of the case be permitted. But if he declines to resign and offers no satisfactory explanation of the charge,

the whole case shall be submitted to a special meeting of the Society.

(4) If two-thirds of the members at this special meeting (providing there be not less than twenty persons) vote for expulsion, the Chairman of the meeting shall cause the accused to be expelled from the Society, and direct the Secretary to notify the accused of this action.

ARTICLE IV.

Officers.

- I. The officers of the Society shall consist of a President, Past Presidents, twelve Vice-Presidents, twenty-four Members of Council, and a Secretary and Treasurer.
- 2. Both Members and Associates are eligible for the offices of President, Vice-President and Members of Council, but three-fourths of the Council shall be Members.
- 3. Prior to the date of the annual meeting of the Society of the year with which the term of the President expires, the Council shall nominate a candidate for the office of President, whose name shall be presented to the Society for election at the annual meeting. Any other candidate whose nomination, signed by at least sixty Members and Associates, shall have been submitted to the Secretary prior to the annual meeting shall

- also be presented. The candidate receiving the highest number of votes shall be the President for the ensuing three years. The first President under this rule shall be elected at the annual meeting in 1906, and his term of office shall begin January 1st, 1907. The President shall not be eligible for election as his own successor.
- 4. The term of office of the Vice-Presidents shall be six years. Prior to the annual meeting in 1906 the Executive Committee shall by lot divide the present list of Vice-Presidents into six classes, so that the term of two of their number shall expire at the end of 1906, and two others at the end of 1907, and so on to the year 1911. The Vice-Presidents to fill the vacancies occurring each year in any class shall be elected by the Council from their own membership. Retiring Vice-Presidents shall be eligible for re-election.
- 5. The term of office of the Members of Council shall be three years. Prior to the annual meeting in 1906, the Executive Committee shall by lot divide the present list of Members of Council into three classes, each class consisting, as near as may be, of six Members and two Associates. The terms of office of the three classes shall expire at the end of the years 1906, 1907 and 1908 respectively. Retiring Members and Associates shall be eligible for re-election. Prior to

September 1st of each year, the Executive Committee shall prepare voting lists to fill the places of retiring Members and Associates, Members of the Council. The list shall contain the names of at least twelve Members and at least four Associates as candidates for the vacancies. The lists shall contain the names of all retiring Members and Associates who shall not have declined reelection, and of all candidates who shall have been nominated in writing by not less than twenty members in the case of Members, and not less than twenty members and associates in the case of Associates. No nominations received by the Secretary after August 15th shall be considered. Should such nominations not be sufficient in number to fill up lists of at least twelve Members and four Associates as candidates, the Executive Committee shall add sufficient names to fill out these numbers. The voting lists shall be mailed as soon as practicable after September 1st of each year to Members and Associates. Each Member may vote for not more than six Members and two Associates for the Council, and each Associate vote for not more than two Associates. ballots shall be returned by mail to the Secretary and canvassed at the annual meeting. The six members receiving the highest votes shall be declared elected Members of Council, and the two

associates receiving the highest votes shall be declared elected Associate Members of Council, for the term of three years.

- 6. A vacancy in the office of President shall be filled by ballot by the Council from the list of Vice-Presidents until the end of the year in which it occurs. At the annual meeting of that year a new President shall be elected for three years in the manner prescribed in paragraph 3. A vacancy in the office of Members of Council shall be filled by the Council for the unexpired portion of the term of the Member or Associate causing the vacancy.
- 7. The Presidents, Past Presidents and Vice-Presidents shall be ex-officio members of Council.
- 8. The Council may hold meetings subject to the call of the President, as often as the interests of the Society may demand.
 - 9. At all meetings of Council five members shall constitute a quorum.
 - 10. The Secretary and Treasurer shall be elected annually by the Council, but may be removed at any time by a majority vote of the Council after due notice has been given.
 - II. The Secretary must be a member of the Society.

ARTICLE V.

Management.

- I. (1) The President shall have general supervision over the affairs of the Society, appoint special committees, and preside at the annual general meetings. He shall be *ex-officio* member of all committees.
- (2) In the absence of the President, the Vice-Presidents, in the order of seniority, shall preside and perform all the duties of the President.
- 2. The direct management of the Society shall be vested in an Executive Committee composed of five members of Council, elected annually by the Council, the President and Secretary of the Society being ex-officio members of the Committee. At least three of the five elective members of the Committee shall be Members of the Society.
- 3. The Executive Committee shall manage the affairs of the Society in conformity with the laws under which it is incorporated and the provisions of this Constitution. It shall direct the investment and care of the funds of the Society; make appropriations for specific purposes; arrange for the reading and publication of professional papers under such regulations as the Council may from time to time prescribe; take measures to advance

the interests of the Society, and generally direct its affairs.

- 4. The Executive Committee shall make an annual report to the Society, transmitting the report of the Secretary and Treasurer, and of any special committee which may have been ordered.
- 5. (1) The Secretary shall be the Executive Officer of the Society under the immediate direction of the President and the Executive Committee.
- (2) He shall prepare the business for the annual meetings and record the proceedings thereof.
- (3) He shall be responsible for all expenditures and certify the accuracy of all bills or vouchers upon which money has been paid, and he shall conduct the correspondence of the Society and keep full records of the same.
- 6. The Treasurer shall see that all money due the Society is collected and carefully invested in such manner as the Executive Committee may direct. If considered advisable by the Council, the duties of Treasurer may be performed by the Secretary.
- 7. The accounts of the Secretary and Treasurer shall be audited annually by a special committee of three members of Council, appointed by the President of the Society.

ARTICLE VI.

Meetings.

- 1. There shall be at least one annual general meeting of the Society for the reading and discussion of professional papers, election of officers for the ensuing year, and transaction of such other business as may be brought before it. The time and location of this meeting shall be determined by the Council at least three months prior to the date fixed.
- 2. Special meetings may be called by the Executive Committee at the request of twenty members, which request shall state the purpose of the meeting. The call for such meetings shall be issued ten days in advance, and shall state the purpose thereof. At these meetings thirty members shall constitute a quorum.
- 3. The Society may adopt, from time to time, such rules as it may think proper for the order of business at its meetings.
- 4. Special meetings of the Executive Committee may be held at any time, subject to the call of the Chairman; and four members shall constitute a quorum for the transaction of any business that may be properly brought before the Committee.

ARTICLE VII.

Amendments.

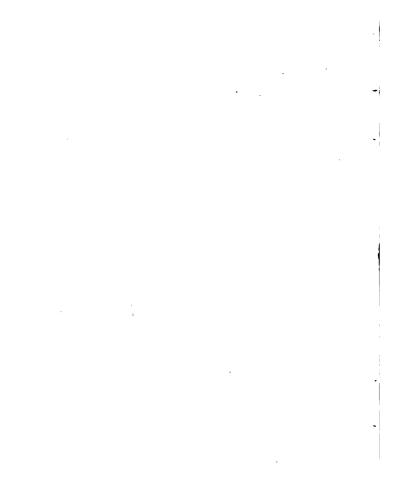
I. Proposed amendments to the Constitution must be reduced to writing and signed by not less than ten members. They shall be forwarded to the Secretary at least ten days before the annual general meeting, and shall be immediately forwarded to the Council for its consideration. If a majority of the Council approve the proposed amendment it shall be presented to the Society at the next ensuing general meeting for discussion; if approved by two-thirds of the members present, voting by ballot, if a ballot be demanded, it shall be adopted.



Society of Naval Architects and Marine Engineers

*FORM OF PROPOSAL OF MEMBER

Name in full
Date of Birth
Nationality
Post-Office Address
Date of Application
Professional position now
held, giving name and
address of institution,
firm or shipyard.
Brief statement of
technical train-
ing and profes-
sional experi-
ence, strict
attention being
paid to the by-
laws governing
applications for
admission to membership.
[See Constitution.] J
I certify that the above statements are correct, and, it
elected, pledge myself to abide by the constitution and by- laws as at present in force or hereafter established, and,
in the event of my ceasing to be a member, that I will
return for cancellation my certificate of membership in
the above society.
Signature of applicant
190
Having examined the above statement, we, the un- dersigned, signify our approval thereof and recommend
Mrfor election as a Member.
Classical of these (
Signature of three
members.
*Same form for Associates and Juniors, except that
the approval of only two members are required for Asso-



TRANSACTIONS OF THE

Naval Architects and Marine Engineers

JABLE OF CONTENTS
OF VOLUMES I TO XVL

VOLUME I. (1893)

288 Pages. 60 Plates and Drawings.

- I. "Evolution of the Atlantic Greyhound."

 CHAS. H. CRAMP, Esq., Pres., Wm. Cramp & Sons' Ship and Engine Building Co.
- "Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements."
 JOSEPH J. WOODWARD, Naval Constr., U. S. N.
- "United States Treasury Rules for the Inspection of Machinery and Boilers."
 JAMES T. BOYD, Esq.
- "Production in the United States of Heavy Steel Engine, Gun and Armor Forgings." RUSSELL W. DAVENPORT, Esq.
- 5. "Coal Bunkers and Coaling Ship."

 ALBERT P. NIBLACE, Lieutenant, U. S. N.
- "Steel Ships of the United States Navy."
 THEODORE D. WILSON, Ex-Chief Constructor, U. S. N.
- "Notes on the Machinery of the New Vessels
 of the United States Navy."
 GEORGE W. MELVILLE, Engineer-in-Chief, U. S. N.

 "Comparative Performances of American and Foreign Freighting Ships—Our Superiority."

WM. W. BATES, Esq., late Commissioner of

Navigation.

 "Some Thoughts on the Design of New York Ferry Boats."
 Col. Edwin A. Stevens, President, Hoboken Ferries.

- 10. "The Law of Frictional Resistance."
 PROF. W. F. DURAND, Cornell University.
- II. "Steam Yachts as Naval Auxiliaries in Time of War."
 WM. GARDNER, Esq.
- 12. "The Wetted Surface of Ships."

 DAVID W. TAYLOR, Naval Constructor, U. S. N.
- 13. "The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels."
 JAMES O'NEILL, Esq.
- 14. "The Development of Shipbuilding on the Great Lakes."
 JNO. F. PANEHURST, Esq.

VOLUME II. (1894)

346 Pages. 69 Plates and Drawings.

- "Some Suggestions of Professional Experience in Connection with the Naval Construction of the Last Ten Years—1884-1894."
 RICHARD W. MEADE, Rear Admiral, U. S. N.
- "The Use of Small Models for the Determination of Curves of Stability."
 Mon. E. Bertin, Director of the French Government School of Naval Design.
- "Some Obstacles to Shipbuilding and Owning in this Country."
 GEO. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco, Cal.
- "Electricity on Shipboard—Its Present Position and Future Development."
 S. DANA GREENE, Esq.
- "Cellulose and Its Application to Warships.".
 Mon. E. Cheneau, Philadelphia, Pa.
- "The U. S. Triple-Screw Cruisers 'Columbia' and 'Minneapolis'."
 GEORGE W. MELVILLE, Engineer-in-Chief, U. S. N.

- "A Dynamic Steam Engine Indicator Tester."
 Professor Cecil H. Peabody, and Asst. Professor
 E. F. Miller, Massachusetts Institute of Technology.
- 8. "Experience Gained with our New Steel
 Ships as Regards Care and Preservation."
 PHILIP HICHBORN, Chief Constructor, U. S. N.
- "Present Status of Face-Hardened Armor."
 W. T. Sampson, Captain and Chief of Ordnance,
 U. S. N.
- 10. "Hydraulic Power for Warships." ALBERT W. STAHL, Naval Constructor, U. S. N.
- II. "Notes on Launching."
 WILLIAM J. BAXTER, Naval Constructor, U. S. N.
- "Yachts in England and America."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- 13. "Accessibility and Circulation of Water-Tube Boilers."
 - L. D. Davis, Esq., M. E. President Davis-Farrar Co.
- 14 "Recent Light-draught Gunboats of U. S. N."
 J. J. WOODWARD, Naval Constructor, U. S. N.
- 15. "An Approximate Formula for the Wetted Surface of Ships."
 Profs. W. F. DURAND and GEO. R. MCDERMOTT,

Profs. W. F. DURAND and GEO. R. McDERMOTT, Cornell University.

VOLUME III. (1895)

300 Pages. 57 Plates and Drawings.

- "American Maritime Development."
 CAPT. HENRY C. TAYLOR, U. S. N., President,
 Naval War College.
- 2. "The Centreboard—Its Influence on Design; Its Value and Proper Use." Wm. P. Stephens, Esq.
- 3. "Rudder Experiments—U. S. S. 'Monterey'."
 ELLIOTT SNOW, Asst. Naval Constructor, U. S. N.
- "Aluminum—Its Alloys and Their Use in Ship Construction."
 J. C. McGuire, Esq., C. E.
- 5. "Methods and Forms for Certain Ship Calculations."
 D. W. TAYLOR, Naval Constructor, U. S. N.
- "The Number of Longitudinal Intervals in Ship Computation, as Affecting the Accuracy of Integration for Displacement, and True Wetted Surface."
 Prof. W. F. DURAND, Cornell University.
- "Recent Designs for Vessels for the U. S. Navy."
 Philip Hichborn, Chief Constructor, U. S. N.
- 8. "Tactical Considerations Involved in War Ship Design."

 ALBERT P. NIBLACK, Lieutenant, U. S. N.

- "Engineering Research in the Navy."
 Prof. Wm. S. Aldrich, University of West Virginia.
- 10. "Performance of the Twin-Screw Steamer 'City of Lowell.'" Prof. JAKES E. DENTON, Stevens Institute of Technology.
- F. B. Dowst, Esq., M. E.
- 12. "An Experimental Test of the Armored Side of the U. S. S. 'Iowa.'" ALBERT W. STAHL, Naval Constructor, U. S. N.

VOLUME IV. (1896)

209 Pages. 58 Plates and Drawings.

- "Test of an Experimental Turret of the U. S. Battleship 'Massachusetts.'" Commodore W. T. Sampson, U. S. N., Chief of Bureau of Ordnance, Navy Department, Washington, D. C.
- 2. "Steel Canal Boats."

 LEWIS NIXON, Manager, Crescent Shipyard,

 Elizabeth, N. J.
- "Naval Practice in Ship Rivets and Riveting."
 Naval Constructor J. H. Lemmard, U. S. N.

- 4. "American Fire-Boats."
 H. DEB. PARSONS, Marine Engineer.
- 5. "Corn-Pith Cellulose."

 HENRY W. CRAMP, Vice-President, Wm. Cramp
 & Sons, Philadelphia, Pa.
- 6. "The New Battle-Ships."
 Chief Constructor Philip Hichborn, U. S. N.
- "Speed Trials of a Screw-Propelled Ferry-Boat."
 F. L. DuBosque, Engineer, Floating Equipment, Pennsylvania Railroad.
- "Hydraulic Sheers for Lifting One Hundred and Twenty-Five Tons."
 Fank B. King, Marine Engineer and Naval Architect.
- "A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability." HUGO HAMME, Naval Architect.
- "Stability of a Ship in Damaged Condition." Prof. James Swan, Massachusetts Institute of Technology.
- "Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battle-Ships."
 Assistant Naval Constructor T. F. Ruhm, U.S.N.
- 12. "Screw Propellers."
 Prof. Ggo. R. McDermort, Cornell University.

VOLUME V. (1897)

247 Pages. 67 Plates and Drawings.

- "Water-Tight Bulkhead Doors the 'Long Arm' System on the U. S. S. 'Chicago.'"
 WM. BARNUM COWLES, Esq.
- "Regulations for Loading Vessels."
 Lewis Nixon, Esq., Manager, Crescent Shipyard.
- 3. "Torpedo Boat Design."
 Asst. Naval Constructor, H. G. GILLMOR, U.S.N.
- 4. "The Commerce of the Great Lakes."
 C. E. Wheeler, Esq.
- 5. "Progressive Trials of the 'Guardian.'"
 Prof. C. H. Peabldy, Mass. Institute Technology.
- "An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers." Preliminary paper. Prof. W. F. DURAND, Cornell University.
- "Some Notes on the Speed Trials and Experience in Commission of our New Battleships."
 Chief Constructor Philip Hichborn, U. S. N.
- 8. "Use of Water Ballast for Colliers in the Pacific Coast Trade."
 HUGO P. FREAR, Esq., Naval Architect.
- "Estimated Weights of Machinery." Prof. Geo. R. McDermott, Cornell University.

- "Navy Yard Expenses."
 Naval Constructor W. J. BAXTER, U. S. N. IO.
- "Pneumatic Steering Gear-as Applied to 11. the U. S. Monitor 'Terror.'" H. A. SPILLER, Esq.

VOLUME VI. (1898)

217 Pages. 120 Plates and Drawings.

PAPERS.

- "The Standard Navy Boats." Ι. ARTHUR B. CASSIDY, Esq.
- "Bilge Keels and Rolling Experiments— 2. U. S. S. 'Oregon.'" Asst. Naval Constructor LAWRENCE SPEAR, U. S. N.
- 3. "Portable Pneumatic Riveters in Shipbuilding.' W. I. BABCOCK, Esq., Manager, Chicago Shipbuilding Co.
- "Torpedo Boat Destroyers for Sea Service, with Special Reference to the Conditions that Prevail on the Pacific Coast."

G. W. DICKIE, Esq., Manager, Union Iron Works, San Francisco.

Topical Discussion—

The Utility of Torpedo Boats, and has the Sub-Marine Boat a Place?

"Steam Economy Test of a Unique Form of Feed Pump." F. M. WHEELER, Esq.

- 6. "The Steam Yacht as a Naval Auxiliary."
 WILLIAM P. STEPHENS, Esq.
- "Designs of the New Vessels for the U. S. Navy."
 Chief Constructor Phillip Highborn, U. S. N.
- 8. "Methods of Securing Water-Tight Work."
 Asst. Naval Constructor H. G. SMITH, U. S. N.
- 9. "Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms."
 Naval Constructor J. J. WOODWARD, U. S. N.
- "An Electrically Operated 150-Ton Revolving Derrick."
 WALTER A. POST, Esq., Manager, Newport News Shipbuilding and Dry Dock Co.
- 11. "Stability of a Battleship under Damaged Conditions."
 Topical Discussion—
 Prof. Cecil H. Parbody, Massachusetts Institute
 of Technology.
- Ist.—Under the circumstances of a blockade at Santiago, which was the more economical method of maintaining the boilers in readiness for immediate action banking the fires or keeping them spread but very thin?
- 2d.—As a result of experience on the blockade, what particular points about the machinery were most likely to give trouble, and what could be done to prevent a recurrence of such trouble?

VOLUME VII. (1899)

285 Pages. 105 Plates and Drawings.

- "Coaling Vessels at Sea." SPENCER MILLER, Esq.
- "Causes for the Adoption of Water-Tube Boilers in the U. S. Navy." Engineer-in-Chief Geo. W. Melville, U. S. N.
- "Suggestions as to Improved Appliances for Launching Ships' Boats."
 John Hyslor, Esq.
- 4. "The Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'."

 Naval Constructor J. J. WOODWARD, U. S. N.
- "The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted." Geo. W. Dickie, Esq., Manager, Union Iron Works.
- "Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results."
 H. F. NORTON, Esq.
- "Notes on the Sheathing of the U. S. S. Chesapeake."
 Naval Constructor LLOYD BANKSON, U. S. N.
- "System of Work in a Great Lake Shipyard."
 W. I. Babcock, Esq., Manager, Chicago Shipbuilding Co.

- "Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard."
 JAMES DICKIE, Esq., Superintendent, Union Iron Works.
- 10. "Designs for the Denver Class Sheathed Protected Cruisers."

 Chief Constructor Philip Hichborn, U. S. N.
- II. "Novelties in Ship Fittings."
 Asst. Naval Constructor R. M. WATT, U. S. N.
- 12. "Progressive Speed Trials of the U. S. S. Manning." Prof. C. H. PEABODY, Massachusetts Institute Technology.
- "Tactical Considerations Involved in Torpedo-Boat Design."
 Lieut. A. P. Niblack, U. S. N.
- 14. "On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over." Prof. Wm. F. DURAND, Sibley College, Cornell University.

VOLUME VIII. (1900)

275 Pages. 151 Plates and Drawings.

PAPERS.

I. "Capacity Test of a Unique Form of Air Pump."

F. Meriam Whereer, Esq.

- "Interchangeability of Units for Marine Work."
 W. D. Forbes, Esq.
- "The Performance of the Imperial Russian Cruiser Variag."
 Chas. H. Camp, Esq., Pres. Wm. Cramp & Sons, Ship and Engine Building Co., Philadelphia, Pa.
- 4. "The United States Experimental Model Basin."

 Naval Constructor D. W. TAYLOR, U. S. N.
- 5. "The Composition and Classification of Paints and Varnishes." Prof. A. H. Sabin.
- "Tests of the Electric Plants of the Battleships Kearsarge and Kentucky." Naval Constructor J. J. Woodward, U. S. N.
- "Coaling of the U. S. S. Massachuset's at Sea." SPENCER MILLER, Esq.
- "Notes on Recent Improvements in Foreign Shipbuilding Plants."
 Asst. Naval Constructor H. G. GILLMOR, U.S.N.
- 9. "Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the Production of the Largest Class of Ocean Passenger and Freight Steamships?

 GEO. W. DICKIE, ESQ., Manager, Union Iron Works, San Francisco.

- "Classification Rules."
 Theodore Lucas Esq.
- 11. "Recent Designs of Battleships and Cruisers of the U. S. N." Chief Constructor Philip Hichborn, U. S. N.
- 12. "A Comparison of the Contract Prices of our Naval Vessels."

 HARRISON S. TAFF, Esq.
- 13. "Launch of a Cruiser and a Battleship."

 JAMES DICKIE, Esq., Supt., Union Iron Works,
 San Francisco.
- 14. "Safety of Torpedo Boats at Sea and in Action Under Various Conditions."

 Naval Constructor LLOYD BANKSON, U. S. N.

VOLUME IX. (1901)

251 Pages. 58 Plates and Drawings.

- I. "Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo.'"

 FRANK E. KIRBY, Esq.
- "Effect of Variation of Dimensions on the Stresses in a Ship's Structure." Professor H. C. SADLER, Esq.
- 3. "Power Consumed in Propelling the Whitehead Torpedo at Various Speeds." FRANK M. LEAVITT, Esq.

- "The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
 Naval Constructor D. W. TAYLOR, U. S. N.
- "The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
 Rear Admiral George W. Melville, U. S. N.
- "A Brief Comparison of Recent Battleship Designs."
 Naval Constructor H. G. GILLMOR, U. S. N.
- "Changes in Torpedo Boat Designs." CHARLES P. WETHERBER, Esq.
- "Late Developments in Armor and Ordnance."
 J. F. Meigs, Esq.
- 9. "Recent Experiments in Attacking Armor with High Explosive Shells."

 Captain E. B. Babbitt, Ordnance Dept., U. S. A.
- "Some Notes on Tidal Corrections."
 Messrs. E. A. Stevens, and C. P. Paulding.
- II. "Side Launch of Torpedo Boats and Torpedo Boat Destroyers."

 Asst. Naval Constructor Wm. G. GROESBECK, U. S. N.

VOLUME X. (1902)

377 Pages. 108 Plates and Drawings.

- I. "Technical Training for Shipbuilders."
 HENRY S. PRITCHETT, Ph.D., LL.D.
- "Progressive Trials of the Screw Ferry Boat 'Edgewater."
 EDWIN A. STEVENS, and CHARLES P. PAULDING.
- "The Possible and Probable Future Developments in the Use of Electricity on Board Ships."
 F. O. BLACKWELL, Esq.
- "The Preliminary Official Trial of the U. S. B. S. 'Maine.'"
 Asst. Naval Constructor J. W. POWELL, U. S. N.
- "The Water-tube Boiler in the American Mercantile Marine."
 WM. A. FAIRBURN, Esq.
- "Longitudinal Bending Stress on Damaged Ships."
 George C. Cook, Esq.
- "Some Problems on the Surfaces of Buoyancy and of Waterlines." Professor Cecil H. Peabody.

 "Vibration of Steamships; with Special Reference to those of the 2d and Higher Periods."

> Rear-Admiral GEORGE W. MELVILLE, Engineerin-Chief. U. S. N.

 "The Development of Modern Ordnance and Armor in the United States."

> Rear-Admiral CHARLES O'NEIL, Chief of the Bureau of Ordnance, U. S. N.

10. "Remarks on the New Designs for Naval Vessels."

Rear-Admiral Francis T. Bowles, Chief Constructor, U. S. N.

- II. "The Tactics of the Gun."

 Lieut.-Commander Albert P. Niblack, U. S. N.
- 12. "Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States."

GEORGE W. DICKIE, Esq.

13. "Submarine Torpedo Boats; Past, Present and Future."
LAWRENCE Y. SPEAR, Esq.

- 14. "Measurement Rules for Yachts, with Special Reference to Racing Conditions."
 F. W. Belknap, Esq.
- "The Balancing of Valve Gears." (Prize Competition Paper.) LUTHER D. LOVEKIN, Esq.

VOLUME XI. (1903)

353 Pages. 148 Plates and Drawings.

- "Progressive Trial of Ferry Boat 'Bremen'."
 EDWIN A. STEVENS, Esq.
- "Notes on the Arrangements and Construction of Steam Pipes and their Connections."
 R. C. MONTEAGLE, Esq.
- 3. "Gasoline Engines for Marine Propulsion."
 D. H. Cox, Esq.
- "Some Thoughts on the Design of Modern Steam Yachts." CLINTON H. CRANE, Esq.
- 5. "Watertight Subdivision of Warships."
 Commander Wm. Hovgaard, Royal Danish Navy.
- 6. "Non-corrosive Nickel Steel Boiler Tubes."

 ALBERT LADD COLBY, Esq.
- 7. "Curves of Form of the Initial Condition."
 GEORGE C. COOK, Esq.
- 8. "The Metric System in Relation to the Shipbuilding Industry in the United States." Naval Constructor J. H. Linnard, U. S. N.
 - 9. "Electricity in Manufacturing Plants."
 W. M. McFarland, Esq.
- "Description of the Design and Building of the 21,000-ton Steamships 'Minnesota' and 'Dakota.'"
 CHARLES R. HANSCOM, Esq.

- 11. "Ships' Forms Derived by Formulæ."
 Naval Constructor D. W. TAYLOR, Esq.
- 12. "Displacement and Stability Calculations."
 WALTER S. LELAND. Esq.
- 13. "Graphic Calculations of a Ship's Stability."
 Professor M. H. BAUER.
- 14. "Notes on the Launching of the Cruiser 'Chattanooga.'"

 M. S. Chace, Esq.
- 15. "Notes on Side Launchings." Asst. Naval Constructor Wm. G. GROESBECK, U. S. N.
- 16. "Launching of Large Merchant Vessels."
 WM. A. FAIRBURN, Esq.
- 17. "Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea." Lieut. L. H. CHANDLER, U. S. N.

VOLUME XII. (1904)

362 Pages. 115 Plates and Drawings.

- I. "Simple Methods in Warship Designs a Necessity."

 GEORGE W. DICKIE, Esq.
- 2. "The Semi-Globular Naval Battery."
 ANSON PHELPS STOKES, Esq.

- "The Seagoing Battleship."
 Commander WILLIAM HOVGAARD, Royal Danish Navy.
- 4. "Some Recent Experiments at the United States Model Basin."

 Naval Constructor D. W. TAYLOR, U. S. N.
- 5. "Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea."

 Lieutenant L. H. CHANDLER, Esq.
- "The U. S. Armored Cruiser 'Colorado'." Asst. Naval Constructor J. W. Powell, U. S. N.
- "Coaling Warships at Sea—Recent Developments."
 SPENCER MILLER, Esq.
- "Time Allowance for Steam Yacht Races."
 Rear-Admiral George W. Melville, Ex-Engineer-in-Chief, U. S. N.
- 9. "On the Rules of Lloyd's Register for Building Yachts to Class."

 GEORGE STANBURY, Esq.
- 10. "The Position of the Center of Lateral Resistance."

 Mons. L. E. Bertin.
- "Subdivision of Weights in Ships' Displacement."
 Colonel Nabor Solani.
- 12. "The Shipping and Shipbuilding of Puget Sound."

 FRANK W HIBBS. Esg.

- 13. "Maintenance of Machinery in Merchant Ships."
 ROBERT HAIG, Esq.
- 14. "Uniform Specifications."
 W. D. FORBES, Esq.
- 15. "High-Speed Gasoline Launches." CLINTON H. CRANE, Esq.
- 16. "Speed and Power of Recent Motor Boats."
 ALPHEUS A. PACKARD, Esq.
- 17. "Recent Launching Practice of the Atlantic Coast."

Asst. Naval Constructor R. H. M. Robinson, U. S. N.

18. "Recent Launching Practice of the Pacific Coast."

EVERETT P. LESLEY, Esq.

VOLUME XIII. (1905)

304 Pages. 201 Plates and Drawings,

PAPERS.

- "Some Problems in Ferry Boat Propulsion." Colonel Edwin A. Stevens, Vice-President.
- 2. "Experiments With Ventilating Fans and Pipes."

Naval Constructor D. W. TAYLOR, U. S. N., Member of Council.



- "Experimental Researches on the Performance of Screw Propellers."
 Professor Wm. F. Durand, Member of Council.
- 4. "Some Results of Tests of Model Propellers."

 A. V. Curtis, and L. F. Hewins, Juniors.
- "The Cruiser."
 Commander Wm. Hovgaard, Royal Danish Navy, Member.
- "A Comparison of Recent Battleships."
 Naval Constructor H. G. GILLMOR, U. S. N., member.
- "THE ULTIMA," a Globular Naval Battery."
 ANSON PHELPS STOKES. ASSOCIATE.
- 8. "A Note from Japan."

 GEORGE W. DICKIE, Member of Council.
- "Longitudinal Bending Moments of Certain Lake Steamers."
 W. I. Babcock, Member of Council.
- 10. "Some Notes on Steam Boiler Troubles." HORACE SEE, Member of Council.
- "Notes on the Strength of Water-tight Bulkheads for Battleships and Cruisers." HAROLD F. NORTON, Associate.
- 12. "Marine Applications of the Curtis Steam Turbine."

 CURTIS, CHARLES G., Member.

- "Marine Steam Turbine Development and Design.' E. M. SPEAKMAN, Associate.
- 14. "Methods of Conducting Speed Trials." Naval Constructor J. J. WOODWARD, U. S. N., Member.
- 15. "How a Ninety-footer Behaves in an Ocean Race." PAUL EVE STEVENSON, Associate.
- "Problems in Connection with High Speed Launches." CLINTON H. CRANE. Associate.
- 17. "Progressive Speed Trials of the Gasoline Launch 'LUDO'." GEORGE CROUSE COOK, Member.
- 18. "Scantling Regulations in Yachting." W. P. STEPHENS. Associate.

VOLUME XIV. (1906)

276 Pages. 134 Plates and Drawings.

PAPERS.

- "A Fireproof Ferryboat." F. L. DuBosous, Member.
- "Construction of a Fireproof Excursion Steamer."

WILLIAM GATEWOOD, Member.

 "Performance of the Paddle-Wheel Steamboat 'New York' of the Hudson River Day Line."

Professor J. E. DENTON, Member of Council.

 "Personal Impressions of Model Towing Stations Abroad."

Professor C. H. PEABODY, Member of Council.

5. "The Experimental Tank of the University of Michigan."

Professor H. C. SADLER, Member.

 "Model Basin Gleanings."
 Naval Constructor D. W. Taylor, U. S. N., Vice-President.

6½. "The Limit of Propeller Efficiency."
WILLIAM- MCENTER, U. S. N., Associate.

 "A Comparison of Durand's and Curtis & Hewins Papers on Propeller Experiments of 1905."

Colonel E. A. Stevens, Vice-President.

8. "A. Modern Fleet."

Captain E. B. BARRY, U. S. N., Associate.

... "Recent Developments in Armor and Armament."

TOHN F. MEIGS. Associate.

"Notes on the Development of War Ship Design."

Naval Constructor R. H. Robinson, U. S. N., Member.

II. "The Development of Submarines."

LAWRENCE Y. SPEAR, Member.

12. "The Effect of the Universal Rule in Recent Yachts."

MARTIN C. ERISMANN, Junior.

- "Explosive Engines for Naval Purposes."
 Arthur T. Chester, Associate.
- 14. "Two Timber Dry Docks and Their Pumping Plant."
 F. P. PALEN, and G. L. SMITH, Members.
- 15. "A New Sea Anchor for Coaling at Sea."
 Spencer Miller, Member.

VOLUME XV. (1907)

253 Pages. 114 Plates and Drawings.

- "An Experimental Investigation of Stream Lines Around Ships' Models." Naval Constructor D. W. Taylor, U. S. N., Vice-Pres.
- "Some Experiments Upon the Effect of Longitudinal Distribution of Displacement."
 Professor H. C. Sapler, Member.
- "Further Tactical Consideration Involved in Warship Design."
 Com. A. P. NIBLACK, U. S. N., Member of Council.
- 4. "Submarines of Battleship Speed."
 MASON S. CHACE, Member.

- "Motor Boats for Naval Service."
 Naval Constructor L. S. Adams, U. S. N., Member.
- 6. "High Speed Motor Boats for Pleasure Use."
 - H. R. Sutphen, Associate.
- "Some Observations on Motor Propelled Vessels and Notes on the Bermuda Race."
 W. B. STEARNS, Member.
- "Two New Revenue Cutters for Special Purposes."
 Capt. C. A. McAllister, U. S. R. C. S., Member.
- "Tests on the S. S. Governor Cobb."
 Prof. W. S. Leland and H. A. Everett, Members.
- "Appliances for Manipulating Lifeboats on Sea-Going Vessels."
 Axel Welln, Member.
- II. "The Transportation of Refrigerated Meat to Panama."

 ROLAND ALLWORK, Member.
- 12. "Two Instances of Unusual Repairs to Vessels."
 - Asst. Naval Cons. W. B. Ferguson, U. S. N., Associate.
- "Wooden Sailing Vessels (with particular reference to those built previous to the Civil War)."
 B. B. CROWNINSHIELD, Member.
- "Some Early History Regarding the Double-Turreted Monitors 'Miantonomoh' and Class."
 - W. T. Powell, Member.

VOLUME XV. (1907.)

PAPERS READ BEFORE THE INTERNATIONAL CONGRESS OF NAVAL ARCHITECTS.

HELD IN BORDEAUX, FRANCE, JUNE, 1907.

On the Speed of Battleships." Commander WM. HOVGAARD, R. D. N. Member.

"The Subsurface Torpedo Boat." W. I. BABCOCK, Member of Council.

"The Skilled Mechanic." W. D. FORBES, Member of Council.

VOLUME XVI. (1908)

Pages. Plates and Drawings.

- I. "The War Eagle."

 CHARLES H. CRAMP, Vice-President.
- 2. "Practical Methods of Conducting Trials of Vessels."

Col. E. A. STEVENS, Vice-President.

- "The Influence of Midship Section Shape upon the Resistance of Ships." Naval Constructor D. W. TAYLOR, U. S. N., Vice-President.
- "Further Experiments upon Longitudinal Distribution of Displacement and its Effect upon Resistance." Professor H. C. SADLER, Member.
- 5. "Further Propeller Analysis." CLINTON H. CRANE, Associate.
- "Deviation of the Compass Aboard Steel Ships; its Avoidance and Correction." Lieut. Commander L. H. CHANDLER, U. S. N., Member.
- "The Influence of Free Water Ballast upon Ships and Floating Docks." Naval Constructor T. G. ROBERTS, U. S. N., Member.
- 8. "Some Recent Inventions as Applied to Modern Steamships."

W. CARLILE WALLACE, Member,

- 9. "Service Test of the Steamship Harvard."

 Professor C. H. Peabody, Member of Council.

 Professor W. S. Leland, Member.

 Professor H. A. EVERETT. Member.
- 10. "Trials of the U. S. Scout Cruiser Chester fitted with Parsons Turbines." CHARLES P. WETHERBEE. Member.
- 12. "Ship Building on the Great Lakes."
 ROBERT CURR. Member.
- "The Steamer Commonwealth."
 J. H. GARDNER and W. T. BERRY, Members.
- 14. "Centrifugal Pump Fire Boats."
 CHARLES C. WEST, Member.
- 15. "Sea Going Suction Dredges."
 Thomas M. Cornbrooks, Member.
- "The British International Trophy Race of 1908."
 W. P. STEPHENS. Associate.
- 17. "Transportation of Submarines."

 Naval Constructor W. J. BAXTER, U. S. N.,

 Member of Council.

Author's Names and Papers.

ADAMS, L. S.

"Motor Boats for Naval Service." Vol. 15.

ALDRICH, WM. S.

"Engineering Research in the Navy." Vol. 3.

ALLWORK, ROLAND.

"The Transportation of Refrigerated Meat to Panama." Vol. 15.

BABBITT, E. B.

"Recent Experiments in Attacking Armor with High Explosive Shells." Vol. 9.

BABCOCK, W. I.

"Portable Pneumatic Riveters in Shipbuilding." Vol. 6.

"System of Work in a Great Lake Shipyard."
Vol. 7.

"Longitudinal Bending Moments of Certain Lake . Steamers." Vol. 13.

"The Subsurface Torpedo Boat." Vol. 15.

BANKSON, LLOYD.

"Safety of Torpedo Boats at Sea and in Action Under Various Conditions." Vol. 8.

"Notes on the Sheathing of the U. S. S. 'Chesapeake.'" Vol. 7.

BATES, WM. W.

"Comparative Performance of American and Foreign Freighting Ships-Our Superiority." Vol. 1.

BAUER, M. H.

"Graphic Calculations of a Ship's Stability."
Vol. 11.

BARRY, E. B.

"A Modern Fleet." Vol. 14.

BAXTER, WILLIAM J.

"Notes on Launching." Vol. 2.

"Navy Yard Expenses." Vol. 5.

"Transportation of Submaries." Vol. 16.

BELKNAP, F. W.

"Measurement Rules for Yachts, with Special Reference to Racing Conditions." Vol. 10.

BERTIN, L. E.

"The Use of Small Models for the Determination of Culves of Stability." Vol. 2.

"The Position of the Center of Lateral Resistance."
Vol. 12.

BLACKWELL, F. O.

"The Possible and Probable Future Development in the Use of Electricity on Board Ships." Vol. 10.

Bowles, Francis T.

"Remarks on the New Designs for Naval Vessels."
Vol. 10.

BOYD, JAMES T.

"United States Treasury Rules for the Inspection of Machinery and Boilers." Vol. 1.

CASSIDY, ARTHUR B.

"The Standard Navy Boats." Vol. 6.

CHANDLER, L. H.

"Some Notes on the Performance of the Torpedo Vessels of the U. S. Navy at Sea." Vol. 11,

"Some Further Notes on the Performance of the Torpedo Boats of the United States Navy at Sea." Vol. 12.

"Deviation of the Compass Aboard Steel Ships; its Avoidance and Correction." Vol. 16.

CHACE, M. S.

"Notes on the Launching of the Cruiser 'Chattanooga'." Vol. 11.

"Submarines of Battleship Speed." Vol. 15.

CHENEAU, E.

"Cellulose and Its Application to Warships."

CHESTER, A. T.

"Explosive Engines for Naval Purposes." Vol. 14.

COLBY, ALBERT LADD

"Non-Corrosive Nickel Steel Boiler Tubes."
Vol. 11.

Cook, George C.

"Longitudinal Bending Stress on Damaged Ships."
Vol. 10.

"Curves of Form of the Initial Condition." Vol. 11.
"Progressive Speed Trials of the Gasoline Launch
"LUDO"." Vol. 13.

CORNBROOKS, THOMAS M.

"Sea Going Suction Dredges." Vol. 16.

COWLES, WM. BARNUM

"Water-Tight Bulkhead Doors — the 'Long Arm' System on the U. S. S. 'Chicago'." Vol. 5.

Cox, D. H.

"Gasoline Engines for Marine Propulsion."
Vol. 11.

CRAMP. CHAS. H.

"Evolution of the Atlantic Greyhound." Vol. 1. "The Performance of the Imperial Russian Cruiser 'Variag'." Vol. 8.

"The War Eagle." Vol. 16.

CRAMP, HENRY W.

"Corn-Pith Cellulose." Vol. 4.

CRANE, CLINTON H.

"Some Thoughts on the Design of Modern Steam Yachts." Vol. 11.

"High Speed Gasoline Launches." Vol. 12.

"Problems in Connection with High Speed Launches." Vol. 13.

"Further Propeller Analysis." Vol. 16.

CROWNINSHIELD, B. B.

"Wooden Sailing Vessels (with particular reference to those built previous to the Civil War." Vol. 1s.

CURR, ROBERT.

, -

"Ship Building on the Great Lakes." Vol. 16.

CURTIS, CHARLES G.

"Marine Applications of the Curtis Steam Turbine."

CURTIS, A. V., AND HEWINS, L. F.
"Some Results of Tests of Model Propellers."
Vol. 13.

DAVENPORT, RUSSELL W.

"Production in the United States of Heavy Steel Engine, Gun and Armor Forgings." Vol. 1.

DAVIS, L. D.

"Accessibility and Circulation of Water - Tube Boilers." Vol. 2.

DENTON, JAMES E.

"Performance of the Twin-Screw Steamer 'City of Lowell'." Vol. 3.

"Performance of the Paddle Wheel Steamboat 'New York' of the Hudson River Day Line." Vol. 14.

DICKIE. JAMES

"Overhead Cranes, Staging and Riveter Carrying Appliances in the Shipyard." Vol. 7.

"Launch of a Cruiser and a Battleship." Vol. 8. DICKIE, GEO, W.

"Some Obstacles to Shipbuilding and Owning in this Country." Vol. 2.

"Torpedo Boat Destroyers for Sea Service, with Special Reference to the Conditions that Prevail on the Pacific Coast." Vol. 6.

"The Increasing Complications in Warships, and How Simpler Arrangements might be Adopted." Vol. 7.

"Can the American Shipbuilder under Present Conditions Compete with the British and German Shipbuilders in the production of the Largest Class of Ocean Passenger and Freight Steamships?" Vol. 8.

"Why it Takes So Long Time to Build and Equip a Naval Vessel for the United States." Vol. 10. "Simple Methods in Warship Designs a Necessity." Vol. 12.

"A Tale from Japan." Vol. 13.

Dowst, F. B.

"The Ventilation of Ships." Vol. 3.

DUBOSQUE, F. L.

"Speed Trials of a Screw-Propelled Ferry-Boat."
Vol. 4.

"A Fireproof Ferryboat." Vol. 14.

DURAND, W. F., AND McDermott, Geo. R.

"An Approximate Formula for the Wetted Surface of Ships." Vol. 2.

"Screw Propellers." Vol. 4.

"Estimated Weights of Machinery." Vol. 5.

DURAND, W. F.

10

"The Law of Frictional Resistance." Vol. 1.

"The Number of Longitudinal Intervals in Ship Competition, as Affecting the Accuracy of Integration for Displacement," and "Note on the Relation between Reduced and True Wetted Surface." Vol. 3.

"An Experimental Study of the Influence of Surface upon the Performance of Screw Propellers." Preliminary Paper, Vol. 5.

"On the Action of the Rudder, with Special Reference to the Motion of the Ship while the Helm is being put over." Vol. 7.

"Experimental Researches on the Performance of Screw Propellers." Vol. 13.

ERISMANN, MARTIN C.

"The Effect of the Universal Rule in Recent Yachts." Vol. 1.

FAIRBURN, WM. A.

"The Water-tube Boiler in the American Mercan tile Marine." Vol. 10.

"Launching of Large Merchant Vessels." Vol. 11.

FERGUSON, W. B.

"Two Instances of Unusual Repairs to Vessels."

FORBES, W. D.

"Interchangeability of Units for Marine Work."
Vol. 8.

"Uniform Specifications." Vol. 12.

"The Skilled Mechanic." Vol. 15.

FREAR, HUGO P.

"Use of Water Ballast for Colliers in the Pacific Coast Trade." Vol. 5.

GARDNER, J. H., AND BERRY, W. T.

"The Steamer Commonwealth." Vol. 16.

GARDNER, WM.

"Steam Yachts as Naval Auxiliaries in Time of War." Vol. 1.

GATEWOOD, WILLIAM

"Construction of a Fireproof Steamer." Vol. 14.

GILLMOR, H. G.

"Torpedo Boat Design." Vol. 5.

"Notes on Recent Improvements in Foreign Shipbuilding Plants," Vol. 8.

"A Brief Comparison of Recent Battleship Designs." Vol. 9.

"A Comparison of Recent Battleships." Vol. 13.

GREENE. S. DANA

"Electricity on Shipboard — Its Present Position and Future Development." Vol. 2.

GROESBECK, WM. G.

"Side Launch of Torpedo Boats and Torpedo Boat Destroyers." Vol. 9.

"Notes on Side Launchings." Vol. 11.

HAIG, ROBERT

"Maintenance of Machinery in Merchant Ships."

HAMMAR, HUGO

"A Method of Calculating the Stability of Ships Adapted to the Use of Standard Curves of Stability." Vol. 4.

HANSCOM, CHARLES R.

"Description of the Design and Building of the 21,000-ton Steamships 'Minnesota' and 'Dakota'."
Vol. 11.

HIBBS, FRANK W.

"The Shipping and Shipbuilding of Puget Sound."
Vol. 12.

HICHBORN. PHILIP

"Experience Gained with our New Steel Ships as Regards Care and Preservation." Vol. 2.

"Recent Designs for Vessels for the U. S. Navy."
Vol. 3.

"The New Battleships." Vol. 4.

"Some Notes on the Speed Trials and Experience in Commission of our New Battleships." Vol. 5.

"Designs of the New Vessels for the U. S. Navy."
Vol. 6.

"Designs for the 'Denver' Class Sheathed Protected Cruisers." Vol. 7.

"Recent Designs of Battleships and Cruisers of the U. S. N." Vol. 8.

HOVGAARD, WM.

"Watertight Subdivision of Warships." Vol. 11.

"The Seagoing Battleship." Vol. 12. "The Cruiser." Vol. 13.

"On the Speed of Battleships." Vol. 15.

Hyslop, John

"Suggestions as to Improved Appliances for Launching Ships' Boats." Vol. 7.

KING, FRANK B.

"Hydraulic Sheers for Lifting One Hundred and Twenty-five Tons." Vol. .

KIRBY, FRANK E.

"Trial of Speed between the Steamers 'City of Erie' and 'Tashmoo'." Vol. 9. LEAVITT, FRANK M.

"Power Consumed in Propelling the Whitehead Torpedo at Various Speeds." Vol. 9.

LELAND, WALTER S.

"Displacement and Stability Calculations." Vol. 11.

LELAND, W. S., and H. A. EVERETT.
"Tests on the S. S. 'Governor Cobb.'" Vol. 15.

LESLEY, EVERETT P.

"Recent Launching Practice of the Pacific Coast."
Vol. 12.

LINNARD, J. H.

"Naval Practice in Ship Rivets and Riveting."
Vol. 4.

"The Metric System in Relation to the Shipbuilding Industry in the United States." Vol. 11.

LOVEKIN, LUTHER D.

"The Balancing of Valve Gears." Prize Competition Paper." Vol. 10.

Lucas, Theodore

"Classification Rules." Vol. 8.

McAllister, C. A.
"Two New Revenue Cutters for Special Purposes." Vol. 15.

McEntee, William

"The Limit of Propeller Efficiency." Vol. 14.

McFarland, W. M.

"Electricity in Manufacturing Plants." Vol. 11.

McGuire, J. C.

"Aluminum—Its Alloys and Their Use in Ship Construction." Vol. 3.

MEADE, RICHARD W.

"Some Suggestions of Professional Experience in Connection with the Naval Construction of the Last Ten Years—1884-1894." Vol. 2.

MEIGS, J. F.

t

"Late Developments in Armor and Ordnance."
Vol. 9.

"Recent Developments in Armor and Armament."
Vol. 14.

MELVILLE, GEORGE W.

"Notes on the Machinery of the New Vessels of the United States Navy." Vol. 1.

"The U. S. Triple-Screw Cruisers 'Columbia' and 'Minneapolis'." Vol. 2.

"Causes for the Adoption of Water-Tube Boilers in the U. S. Navy." Vol. 7.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.)
Vol. 9.

"Vibration of Steamships; with Special Reference to those of the 2d and Higher Periods." Vol. 10. "Time Allowance for Steam Yacht Races." Vol. 12.

MILLER, SPENCER

"Coaling Vessels at Sea." Vol. 7.

"Coaling of the U. S. S. Massachusetts at Sea."

Vol. 8. "Coaling Warships at Sea—Recent Developments."
Vol. 12.

"A New Sea Anchor for Coaling at Sea." Vol. 14.

MONTEAGLE, R. C.

"Notes on the Arrangements and Construction of Steam Pipes and their Connections." Vol. 11.

NIBLACK. ALBERT P.

"Coal Bunkers and Coaling Ship." Vol. 1.

"Tactical Considerations Involved in War Ship Design." Vol. 3.

"Tactical Considerations Involved in Torpedo-Boat Design." Vol. 7.

"The Tactics of the Gun." Vol. 10.

"Further Tactical Considerations Involved in Warship Design." Vol. 15.

NIXON, LEWIS

"Yachts in England and America." Vol. 2.

"Steel Canal Boats." Vol. 4.

"Regulations for Loading Vessels." Vol. 5.

NORTON, H. F.

"Beam Formulæ Applied to a Vertically Stiffened Bulkhead, with some Results." Vol. 7.

"Notes on the Strength of Water-tight Bulkheads for Battleships and Cruisers." Vol. 13.

O'NEIL, CHARLES

"The Development of Modern Ordnance and Armor in the United States." Vol. 10.

O'Neil, James

"The Influence of Speed and Weight of Machinery on the Determination of the Other Elements of the Design of Steam Vessels." Vol. 1.

PACKARD, ALPHEUS A.

"Speed and Power of Recent Motor Boats."
Vol. 12.

PALEN, F. P., AND G. L. SMITH

"Two Timber Dry Docks and Their Pumping Plant." Vol. 14.

PANKHURST, JNO. F.

"The Development of Shipbuilding on the Great Lakes," Vol. 1.

PARSONS, H. DEB.

"American Fire-Boats." Vol. 4.

PEABODY, C. H., AND MILLER, E. F.

"A Dynamic Steam Engine Indicator Tester." Vol. 2.

Реавору, С. Н.

"Progressive Trials of the 'Guardian'." Vol. 5. "Stability of a Battleship under Damaged Condi-

tions." Vol. 6.
"Progressive Speed Trials of the U. S. S. 'Manning'." Vol. 7.

"Some Problems on the Surfaces of Buoyancy and of Waterlines." Vol. 10.

"Personal Impressions of Model Towing Stations."

Peabody, C. H., Leland, W. S., and Everett H. A. "Service Test of the Steamship Harvard." Vol. 16.

Post, Walter A.

Vol. 14.

"An Electrically Operated 150-ton Revolving Derrick." Vol. 6.

POWELL, J. W.

"The Preliminary Official Trial of the U. S. B. S. 'Maine'." Vol. 10.

"The U. S. Armored Cruiser 'Colorado'." Vol. 12

POWELL, W. T.

"Some Early History Regarding the Double-Turreted Monitors 'Miantonomoh' and Class."

Vol. 15. PRITCHETT, HENRY S.

"Technical Training for Shipbuilders." Vol. 10.

ROBERTS T. G.

"The Influence of Free Water Ballast upon Ships and Floating Docks." Vol. 16.

Robinson, R. H. M.

"Recent Launching Practice of the Atlantic Coast." Vol. 12.

"Notes on the Development of War-Ship Design." Vol. 14.

RUHM, T. F.

"Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battleships." Vol. 4.

SABIN, A. H.

"The Composition and Classification of Paints and

SADLER, H. C.

"Effect of Variation of Dimensions on the Stresses in a Ship's Structure." Vol. 9.

"The Experimental Tank of the University of Michigan." Vol. 14.

"Some Experiments Upon the Effect of Longitudinal Distribution of Displacement." Vol. 15.
"Further Experiments upon Longitudinal Distribution of Displacement and its Effect upon Resistance." Vol. 16.

SAMPSON, W. T.

"Present Status of Face-Hardened Armor." Vol. 2.
"Test of an Experimental Turret of the U. S.
Battleship 'Massachusetts'." Vol. 4.

SEE, HORACE

"Some Notes on Steam Boiler Troubles." Vol. 13.

SMITH, H. G.

"Methods of Securing Water - Tight Work."
Vol. 6.

SNOW, ELLIOT

"Rudder Experiments — U. S. S. 'Monterey'."
Vol. 3.

SOLIANI, NABOR

ř

ř

"Sub-division of Weights in Ships' Displacement."

Vol. 12.

SPEAKMAN, E. M.

"Marine Steam Turbine Developments and Design." Vol. 13.

SPEAR, LAWRENCE

"Bilge Keels and Rolling Experiments—U. S. S. 'Oregon'." Vol. 6.

"Submarine Torpedo Boats; Past, Present and Future." Vol. 10.

"The Development of Submarines." Vol. 14.

SPILLER, H. A.

"Pneumatic Steering Gear—as Applied to the U.
S. Monitor 'Terror'." Vol. 5.

STAHL, ALBERT W.

"Hydraulic Power for Warships." Vol. 2.

"An Experimental Test of the Armored Side of the U. S. S. 'Iowa'." Vol. 3.

STANBURY, GEORGE

"On the Rules of Lloyd's Register for Building Yachts to Class." Vol. 12.

STEARNS. W. B.

"Some Observations on Motor Propelled Vessels and Notes on the Bermuda Race." Vol. 15.

STEPHENS, WM. P.

"The Centreboard—Its Influence on Design; Its Value and Proper Use." Vol. 3.

"The Steam Yacht as a Naval Auxiliary." Vol. 6. "Scantling Regulation in Yachting." Vol. 13.

"The British International Trophy Race of 1908."
Vol. 16.

STEVENS, E. A., AND PAULDING, CHARLES P.

"Some Notes on Tidal Corrections." Vol. 9.
"Progressive Trials of the Screw Ferry Boat
'Edgewater'." Vol. 10.

STEVENS, EDWIN A.

"Some Thoughts on the Design of New York Ferry Boats." Vol. 1.

"Progressive Trial of Ferry Boat 'Bremen'."
Vol. 11.

"Some Problems in Ferry Boat Propulsion." Vol. 13.

"A Comparison of Durand's and Curtis & Hewins' Experiments of 1905." Vol. 14.

"Practical Methods of Conducting Trials of Vessels." Vol. 16.

STEVENSON, PAUL EVE

"How a Ninety-footer Behaves in an Ocean Race." Vol. 13.

STOKES, ANSON PHELPS

"The Semi-Globular Naval Battery." Vol. 12. "'The Ultima', a Globular Naval Battery." Vol. 13.

SUTPHEN, H. R.

"High Speed Motor Boats for Pleasure Use."

Vol. 15.

SWAN, JAMES

"Stability of a Ship in Damaged Condition."

TAFT, HARRISON S.

"A Comparison of the Contract Prices of our Naval Vessels." Vol. 8.

TAYLOR, DAVID W.

"The Wetted Surface of Ships." Vol. 1.

"Methods and Forms for Certain Ship Calculations." Vol. 3.

"The United States Experimental Model Basin."
Vol. 8.

"The Theoretical and Practical Methods of Balancing Marine Engines." (Prize Competition Paper.) Vol. 9.

"Ship's Forms Derived by Formulæ." Vol. 11.

"Some Recent Experiments at the United States Model Basin." Vol. 12.

"Experiments With Ventilating Fans and Pipes."
Vol. 13.

"Model Basin Gleanings. Vol. 14.

"An Experimental Investigation of Stream Lines Around Ships' Models." Vol. 15.

"The Influence of Midship Section Shape upon the Resistance of Ships." Vol. 16.

TAYLOR, HENRY C.

"American Maritime Development." Vol. 3.

"Some Recent Inventions as Applied to Modern Steamships." Vol. 16.

WALLACE, W. CARLILE

"Some Recent Inventions as Applied to Modern Steamships." Vol. 16.

WATT, R. M.

"Novelties in Ship Fittings." Vol. 7.

WELIN, AXEL.

"Appliances for Manipulating Lifeboats on Seagoing Vessels." Vol. 15.

WEST, CHARLES C.

"Centrifugal Pump Fire Boats." Vol. 16.

WETHERBEE. CHARLES P.

"Changes in Torpedo Boat Designs." Vol. 9.
"Trials of the U. S. Scout Cruiser Chester Fitted
with Parsons Turbines." Vol. 16.

WHEELER, C. E.

"The Commerce of the Great Lakes." Vol. 5.

WHEELER, F. M.

"Steam Economy Test of a Unique Form of Feed Pump." Vol. 6.

WILSON, THEODORE D.

"Steel Ships of the United States Navy." Vol. 1.

WOODWARD, JOSEPH J.

"Determination of the Approximate Dimensions of a Vessel to Fulfill a Given Programme of Requirements." Vol. 1.

"Recent Light-Draught Gunboats of the U. S. Navy." Vol. 2.

"Test of the Strength of a Longitudinal Bulkhead Separating Two Engine Rooms." Vol. 6.

"The Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 7.

"Tests of the Electric Plants of the Battleships 'Kearsarge' and 'Kentucky'." Vol. 8.

"Methods of Conducting Speed Trials." Vol. 13.



Each Volume also Contains:

List of Officers.

List of Members and Associates.

Articles of Incorporation.

Constitution and By-Laws.

Proceedings of Annual Meeting.

President's Address.

Report of Secretary and Treasurer.

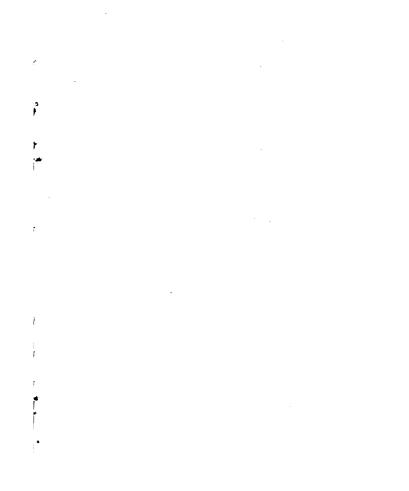
Discussions on each Paper by the Leading

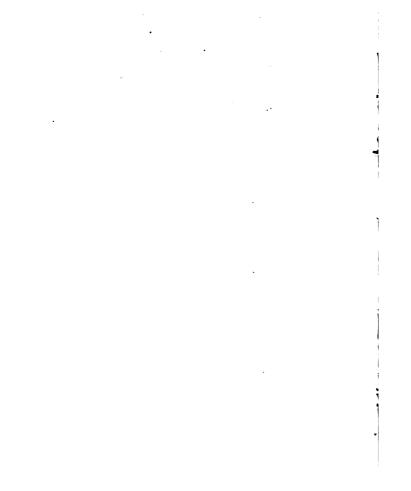
Naval Architects and Engineers of the

Country.

Cloth Binding. Size of Page, Quarto.

MEMORANDUM





,

.

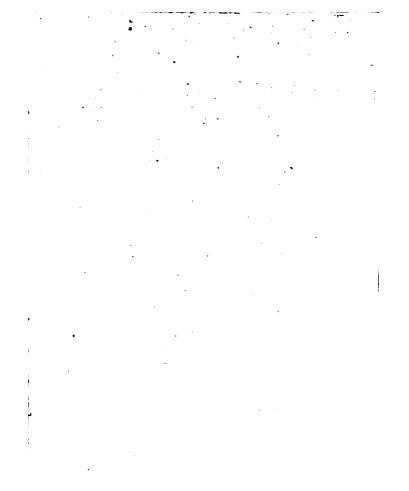
• . •

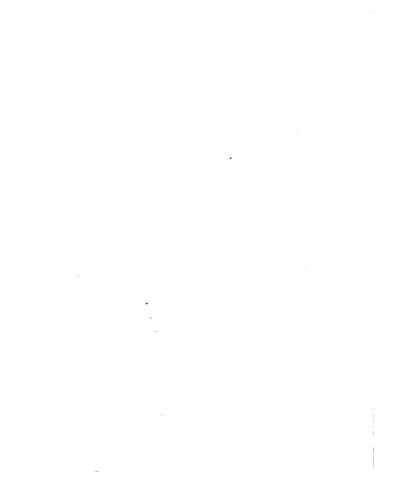
-80

.

,

4 6





)

